Report -

NATIONAL BISON RANGE

NINEPIPE REFUGE

PABLO REFUGE

Refuge Narrative Report

Calendar Year 1969

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UNITED STATES DEPARTMENT OF THE INTERIOR

Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Service
Moiese, Montana

NATIONAL BISON RANGE

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PERMANENT PERSONNEL

Marvin R. Kaschke, Refuge Manager
Robert L. Barber, Assistant Refuge Manager (E.O.D. 01/12/69)
Victor B. May, Refuge Maintenance Foreman
Grant Hogge, Heavy Duty Mechanic
Ernest W. Kraft, Maintenanceman III
Sharon A. Scammon, Clerk-Typist
Edward G. Krantz, Maintenanceman I, WAE
Robert L. Middlemist, Maintenanceman I, WAE
William J. Lampshire, Maintenanceman I, WAE
Steven P. Hedges, Student-Trainee

TEMPORARY PERSONNEL

Robert L. McVey, Laborer
Wayne A. Wetzel, Laborer
Monica C. Pederson, Work-Study Employee
Nancy A. Larum, Work-Study Employee
Cecil D. Barnier, Work-Study Employee
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Jim Joscum, NYC
George McLeod, NYC
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January 1 to December 31, 1969

I. GENERAL

A. Weather Conditions

The year started with a record breaking 36 inches of snow in January. This topped previous snowfall records, for the month, by 10 inches. Temperatures remained unseasonably cold until mid-March. Natives complained it was the longest, coldest winter they could remember.

The following data are from the Refuge weather station.

		Precipitation			
	Snowfall	This Month	Normal	Max Temp.	Min Temp.
January	36"	2.52	.95	48	-22
February	2.5"	.16	.66	43	1
March	3"	.30	.69	64	-14
April		.51	1.08	76	24
May		1.22	1.78	87	23
June		5.34	1.99	93	14
July		.07	1.00	95	36
August		.00	.87	102	34
September		.68	.98	91	25
October		.98	1.06	80	12
November		.11	.80	58	12
December	7"	.38	.88	48	9
				Extremes:	
TOTAL	48.5"	12.27	12.74	102	-22

During a thunderstorm on June 6, 1.80 inches of rain fell in about 20 minutes. Needless to say, water was everywhere, including the basement of all houses. This was caused by window wells filling and funneling the water through the cracks of the sill.

B. Habitat Conditions

1. Water

Water management is based on a 4 C.F.S. appropriation from Mission Creek. From this source, 40 acres of exhibition pasture, hay meadow, picnic and headquarters lawns are irrigated.

The Refuge gravity flow fire system (a 27,000 gallon reservoir) is maintained by pumping from this source. Creek flow is normally stable since it serves as a return for irrigation water used from Ninepipe and Kickinghorse reservoirs. Irrigation needs fluctuate with weather conditions.

Ground water could be described as excellent this year. Springs continued to flow throughout the summer. During late April and August it started getting dry but rains soon supplemented the storage and soil moisture.

2. Food and Cover

Range condition continued to improve as a result of good moisture, the rotational grazing system (see Sec. II, C) and reduced animal populations. Food and cover were abundant for all game species.

It appeared to be an excellent year for grasses. Rough fescue attained maximum plant growth and produced a good seed crop. Other major grasses, Idaho fescue and Bluebunch wheatgrass, responded similarly but were not as striking in comparison.

Noticeable improvement was observed in quanity, leader growth and vigor of most browse species. Berry producing browse plants (Chokecherry, serviceberry and snowberry) failed to yield a crop because of a late freeze on June 1 (14°).

Juniper and aspen, desireable food plants for big game animals, showed the least improvement. Stands of both are growing old and dying, especially along the creek bottom. Apparently they cannot re-establish without fencing for protection as game populations have been reduced and held at a minimum for four years. Some small plots have been fenced near the headquarters area with outstanding results of natural re-establishment. More plots are needed to aid in evaluating the importance of these two species.

Ponderosa pine and Douglas fir are increasing rapidly in the forest type. With the present rate of increase, they will soon become a problem for moving buffalo and harvesting surplus deer and elk. A series of photos taken in 1931, 1952 and scheduled for 1971 show considerable change throughout the 40 year period.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

A single Whistling swan was observed on Mission Creek in mid-January and another on Ravalli Ponds in early April.

The mid-winter waterfowl survey, conducted January 10, revealed 30 Canada geese, 800 Mallards, five American widgeon, 40 Goldeneyes and 60 Common mergansers on Mission Creek and the Jocko River.

Canada geese on Mission Creek produced a minimum of five broods totaling 34 young. Approximately 60 birds used the creek and display pool near headquarters until the opening of waterfowl hunting season in early October, when numbers increased to about 200.

Duck broods were first recorded June 20 with Wood ducks noted on the Jocko River, Blue-winged teal at Ravalli Ponds, and Mallards seen in the Elk display pasture. Subsequently, broods of Pintails and Redheads were observed at Ravalli Ponds.

Mallards, Widgeon and Pintails totaling two to three thousand birds spent much of the fall on the Range, particularly on Mission Creek. At the year's end, the population stood at 22 Canada geese, 910 Mallards, four Green-winged teal, 75 Goldeneyes and 30 Common mergansers.

2. Other Water Birds

A single Pied-billed grebe was observed on Ravalli Ponds in July and small numbers of Great blue herons were noted throughout the year along Mission Creek, the Jocko River and at the ponds.

Student Trainee Hedges, who was quite an avid birder, recorded a Virginia rail and a Sora in the Elk pasture. The former is a rare visitor to the Bison Range.

3. Shorebirds

Killdeer were common in several parts of the Range and young were first noted in the Elk Lane on June 6. Common snipe were heard winnowing in the headquarters area all spring and summer. Young snipe were first observed June 6. Wilson's and Northern phalaropes used Ravalli Ponds in small numbers, but no production was recorded. Spotted sandpipers were present in about normal small numbers.

4. Mourning Doves

Doves were first seen along Trisky Creek on April 21 and were common over most of the Range by May. Young birds were observed occasionally near headquarters and the slaughterhouse. Total numbers using the refuge is estimated to be less than 200.

B. Upland Game Birds

Upland birds fared well this year, particularly in view of the extremely hard winter of 1968-69.

Strutting male Richardson grouse were noted in at least three locations, including two previously delineated territories, Male activity continued well into September. At least five broods, averaging 5.0 young, were observed.

Ruffed grouse inhabit the Mission Creek and Jocko River bottoms, but are rarely observed. Student Trainee Hedges reported two birds in the lower portion of Trisky Creek, and several birds were observed just east of the Range boundary on Mission Creek this fall. No broods were seen.

The Columbian Sharptailed grouse, not seen on the Bison Range since the early 1950's, was reintroduced in April, 1969. Range personnel, in cooperation with the states of Montana and Idaho, trapped several birds on their dancing grounds near St. Anthony, Idaho. Unfortunately, females were hard to come by, with only one or two visiting a ground at any time. As a result, the final catch of 15 birds included only three females. These birds were released in a brushy area south of the Slaughterhouse.

To insure a successful transplant we should have had three times as many birds as were released. The status of the species is still pretty much unknown on the Range as only three observations, of single birds, were made subsequent to the release.

The reintroduction of this species is considered very desirable, and efforts will be continued in the future.

Ring-necked pheasant broods were observed in lower Elk Creek and along Mission Creek, averaging 8.3 young. Several hundred birds took refuge in the Mission Creek bottoms with the opening of hunting season on October 25.

Chukar partridge suffered severe losses during the past winter, but a few birds managed to survive and produce broods. At least six broods, averaging 8.7 young, were observed, with four in Trisky Creek, and one each in Elk Creek and Twin Canyons.

Gray partridge survived the rough winter in excellent numbers and produced numerous broods. This bird appears to be very well adapted to our area and coveys are seen from Highpoint to the creek bottoms in every conceivable habitat type.

A new species was added to our list this year when, on two occasions, a wild turkey was observed roosting along Mission Creek near the refuge entrance.

C. Big-game Animals

1. Buffalo

The bison rotational grazing program was altered in two instances during the year. Herd number one was to have used the Northside Range during the January to March period, but we were

unable to contain them there at that time. The herd was moved into the proper range in early January, but deep snows made grazing difficult and the animals jumped cattleguards and barriers and headed for the windswept ridge-tops. They were moved back twice but continued to resist plans for them. After considering the unusually adverse weather conditions and the relatively poor shape of the Northside Range, the rotation was altered to use the Lower West Range during the winter period. This provided further rest for the Northside Range and gave the herd the ridge-tops they were so persistent in seeking.

Further problems with the rotational system were encountered during the summer period (July - September), when both herds were scheduled for ranges on the South side of the refuge, far from the public's view. Due to the design of the grazing system, this will occur once every four years. After surveying the general condition of all range units with S.C.S. personnel, it was decided there would be no harm to the range if the rotation was altered to place one herd in a unit more readily accessible to the public. Herd number one was then moved to the Alexander Basin Range instead of the Upper South.

As mentioned above, S.C.S. personnel returned this year for the first re-survey of the range since 1964, when the present deferred rotation grazing program was put into effect. All were well pleased with the obvious improvement in the condition of the range. Most strking was the 42% reduction in acreage in Fair condition with corresponding increases in Good and Excellent range. In the short time since the system has been in operation there has been a gain of approximately 1000 a.u.m.'s which equals enough forage to graze an additional 99 bison (average .87 a.u. per bison). (See table below).

Change in range condition 1964-1969 in acres per condition class.

Range condition Class *	1964		1969		Percent Change
	Acres	%	Acres	%	
Excellent	570	3%	1,759	10%	+ 7%
Good	7,320	42%	13,853	78%	+ 36%
Fair	9,500	54%	2,013	12%	- 42%
Poor	235	1%	trace	—	- 1%

* Range condition class: based on S.C.S. method using percent of climax vegetation present.

The outstanding success of the deferred rotation grazing system has been obvious, not only to Range personnel and other professionals but to the visiting public as well. The near-naturalness of Bison Range grasslands is important to the visiting public and is a good selling point for the Bureau.

Minor distribution problems are still apparent in some range units, but effective use of salt and continuing water development

keep over-use to a minimum.

The first bison calves were noted April 8 in the Alexander Basin Range, 10 days earlier than last year. By the end of the month there were 30 of the rusty-colored young ones running with the herds. During round-up, 96 calves were tallied. Known losses were six, bringing the total calf crop to 102 from 107 cows of breeding age (95% crop). This was a welcome increase from the 85% calf crops of the past three years and relieves the fear that some undetected disease was at work in the herds. (See following table).

Annual Calf Production 1955 - 1969
15 year average - 89.2%

1955 - 90%	1960 - 80%	1965 - 94%
1956 - 92%	1961 - 94%	1966 - 85%
1957 - 84%	1962 - 84%	1967 - 85%
1958 - 95%	1963 - 91%	1968 - 85%
1959 - 90%	1964 - 94%	1969 - 95%

The calf sex ratio was again unbalanced in favor of females (55 F : 47 M), although not nearly so much as it was last year. Apparently sex ratios in calves fluctuate in either direction periodically, but the long term average is very nearly even. The 1960 - 1969 average shows 100 F : 97.7 M.

A total of 416 animals was tallied during the annual round-up, held October 1 through 8. An estimated 16 bulls, later accounted for, were missed and left on the range during the activities. The two range herds were worked through the corrals separately and the bulls rotated from one herd to the other.

U.S.D.A. officials John Corcoran, D.V.M., St. Ignatius and Bob Manlove, Livestock Inspector, Missoula, were on hand for the brucellosis vaccination and ear-tattooing. The 52 heifer calves were vaccinated and all calves branded with a "9" on the lower left hip and tattooed with a "V-9" inside the left ear. The 79 live sale animals were ear tagged and back tagged for ease of sorting and handling.

Range herd #1, totaling 194 animals, was released in the Upper South Range and herd #2, with 126 head, was turned into the Upper West Range. The 16 "escapees" will be incorporated into the smaller herd when the opportunity presents itself.

Ninety-six breeding age cows were returned to the range. The herd sex ratio was 100:93.7, female to male.

The butchering program was eliminated entirely this year except for five animals which had to be disposed of for humane reasons. One bull and one cow with bad hips were butchered at roundup and three calves with various injuries were salvaged. Meat from all five animals was donated to local schools for the hot-lunch program. Seven other animals were lost during the year to disease and accidents. (See Disease, Sec. II, I, 1.)

Bison Herd Composition
December 31, 1969

AGE	MALE	FEMALE	TOTAL	ANIMAL UNITS
Calf	43	53	96	28.8
Yrlg.	27	26	53	34.5
2	15	14	29	26.2
3	13	10	23	25.9
4	14	17	31	34.9
5	15	11	26	33.9
6	7	11	18	22.9
7	5	11	16	19.5
8	5	4	9	12.5
9	5	6	11	15.0
10	-	4	4	4.0
11	-	3	3	3.0
12	-	1	1	1.0
14	-	3	3	3.0
17	-	1	1	1.0
Unknown-missed at roundup	16		16	27.2
TOTAL	165	175	340	293.3

2. Elk

The elk herd numbered 53 head at the start of the year, increasing to 68 with the addition of the calves. No losses were known to occur and the herd was held stable at 53 with the removal of 15 animals during the annual disposal. (See table following.)

Elk Herd Composition & Disposal Summary - 1969

Sex & Age	Pre-disposal	Disposal	Balance
Adult Male	18	3	15
Yearling Male	4	2	2
Adult Female	27	7	20
Yearling Female	4	3	1
Calves	15	0	15
Totals	68	15	53

The adult cow to calf ratio was 100:55.6 and the total cow to calf ratio was 100:48.4. At the end of the year the adult portion of the population consisted of 55% females and 45% males or 100:81

Eight adult bulls spent most of the summer along Mission Creek and provided many late afternoon thrills to the visiting public. The elk, next to the bison, is probably the most sought after and asked about species on the Range.

The exhibition herd remained static at two bulls and three cows. While working with members of the Montana Cooperative Wildlife Research Unit on the N.A.S.A. radio-telemetry project, the remains of twin calves, which were apparently aborted or born dead in 1968, were discovered. The oldest cow has a history of twin births. Two of the cows were of breeding age this year, but apparently neither bred successfully.

3. Mule Deer

The population at the beginning of the year was estimated at 217 animals. Known losses totaled nine, including four that were apparently taken by feral dogs, one from tick paralysis (see photo section) and four from unknown causes. Herd composition and disposal data are summarized in the following table:

Mule Deer Herd Composition & Disposal Summary - 1969

Sex & Age	Pre-disposal	Disposal	Balance
Adult bucks	85	31	54
Yearling bucks	26	9	17
Adult does	80	29	51
Yearling does	26	10	16
Fawns	89	1	88
TOTAL:	306	80	226

The adult doe:fawn ratio was 100:111, with a total doe:fawn ratio of 100:84. The adult portion of the post-disposal population consisted of 49% females and 51% males or 100:106 female to male. The end of the year population was estimated at 217.

4. White-tailed Deer

Snow conditions were perfect for the annual census and the refuge crew snow-shoed the Mission Creek bottoms for one of the best white-tailed deer counts in history. Some animals were undoubtedly missed in the timber below Highpoint. That area was not covered the day of the annual census due to a shortage of University people participating in the count. However, better information was obtained than for the past several years.

The population at the beginning of the year was an estimated 158 animals. Composition counts showed 84 fawns. Known losses totaled 11 animals, most of which were probably winter-kill. Three orphaned fawns and a yearling buck were received from outside sources this year. The usual thing is someone picks up a "poor little orphan" and takes it home only to find they are unable to care for it and can't just turn it loose again. Of course these "pets" are one of the big attractions for the visiting public.

Herd composition and disposal data are presented in the table below.

White-tailed Deer Herd Composition & Disposal Summary - 1969

Sex & Age	Pre-Disposal	Disposal	Balance
Adult bucks	52	15	37
Yearling bucks	31	10	21
Adult does	46	10	36
Yearling does	30	5	25
Fawns	87	6	81
TOTALS:	246	46	200

The adult doe:fawn ratio was 100:189 and the total doe:fawn ratio was 100:114. This high adult doe:fawn ratio may reflect an error in classification of yearling and adult does. It is extremely difficult to separate them under field conditions. Adults consisted of 48% does and 52% bucks or 100:109 female to male.

5. Bighorn Sheep

The status of the sheep population remains uncertain again this year. At the end of 1968 the population, on paper, should have numbered 53, but the best counts that year indicated only 33 known animals. This figure appears close to the actual number present. The highest count this year totaled 39 head, including 10 lambs. Until better information is obtained, it is assumed there were 33 sheep at the beginning of the year, plus 10 lambs, and one known loss, leaving 42 at year's end. The single loss was a 4½ year old ewe which had a malignant melanoma on the lower jaw. (See Disease Section.)

6. Antelope

The Pronghorn herd numbered 87 animals at the beginning of the year, and the fawn crop totaled 41. Known losses were 14 including three collected for research, three killed by dogs or coyotes, two with foot-rot and ~~seven~~ eight from accidents and other natural causes. The population stood at 114 at the end of the year.

Composition counts showed 42 bucks, 45 does and 41 fawns prior

to losses. The doe:fawn ratio was 100:91 and the adult doe:adult buck ratio was 100-93.

7. Rocky Mountain Goat

The goat population continued to increase, with the addition of two kids, to 11 animals. They are not often seen, but occasionally come into view on Headquarters Ridge or near Highpoint.

8. Longhorn Steers

Tom and Jerry, the 19 year old steers, both succumbed to the severe winter weather this year, reducing the "herd" to two animals.

9. Black Bear

Two bears were observed during the spring and summer months. On the annual Saddle Club Ride, bears were sighted on Headquarters Ridge and in the head of Elk Creek near Highpoint. One animal was noted near Highpoint on several occasions and residents along the Jocko River reported a bear in Spring Canyon for several weeks.

D. Fur Animals, Predators, Rodents and other Mammals

The number of coyote observations continues to increase and they are now commonly seen over most of the Range.

One Bobcat was seen near Tower 2 during the annual big-game count and tracks were noted in Trisky Creek late in February.

Badgers were common as were Long-tailed weasels. One mink was sighted near the ponds in lower Elk Creek. Few skunks were observed on the Range, but there were numerous road kills in the general area.

Porcupines were abundant, as usual, and some damage to trees was noted. None were removed this year.

Columbian ground squirrels were first seen March 21 in the Exhibition Pasture. The Yellow-bellied marmot colony inhabiting the wood pile on the north side of Mission Creek homed numerous marmots.

Mountain vole populations were exceptionally high all over the Range this year, reflecting the excellent cover conditions produced by the deferred-rotation grazing program.

Mountain cottontails were common and several Snowshoe hares were observed in the timbered area north of Highpoint.

The past policy of no predator control was continued.

E. Hawks, Eagles, Owls, Ravens, Magpies

Hawk observations remained similar to past years with the exception of a Pigeon hawk observation in Trisky Creek in early September. Sparrow hawks were quite common and many young were seen near Headquarters and the bison corrals. Prairie falcons were noted throughout the year, as were Marsh hawks. Red-tails were first seen April 8. A Cooper's hawk was noted at Headquarters in February and Rough-legged hawks were present during the winter months.

Golden eagles were seen year-long with a peak of five or six birds. The nest site on the north slope of Highpoint was again inactive. An adult was observed on the nest on one occasion but never seen on or near it again. A single Bald eagle was noted along Mission Creek in early February.

Great horned owls were seen along Mission Creek and the Jocko River. Short-eared owls were common year-round residents. A long-eared owl was found dead on the road just east of the refuge entrance on February 3. Another one was seen at Headquarters the following day.

Ravens and crows were observed on occasion in small groups and Magpies were common year-round residents.

F. Other Birds

The Student trainee recorded observations of 110 of the 185 species on the refuge bird list. Noteable were new seasonal occurrence records for the Bufflehead, Solitary Vireo, Bobolink and Lazuli Bunting and a nesting record for the Redhead. The Wild turkey was also added to the list with two sighting along Mission Creek. This species was released near Plains, some 40 miles from the Bison Range, several years ago. They have frequently been observed in the Dixon area for the past three or four years.

The nesting Starling population declined again this year, possibly due to a heavier concentration of nesting Brewers' blackbirds which jealously defended their territories from all intruders, avian and human as well.

Bobolinks were seen on the Range for the first time in several years.

G. Fish

In September, a Montana Fish and Game crew electro-sampled a 450 feet section of Mission Creek in conjunction with other sampling being done in the Flathead Valley. They netted 43 fish, including three Rainbow trout, 25 Whitefish, three Squawfish and 12 Columbian horsetail suckers. They were impressed with the relative fertility and food supply of the creek, but bemoaned, as have we, the silted condition of the stream.

H. Reptiles

Western rattlesnakes were encountered on several occasions through the late spring and summer, in most cases along the refuge roads. Three rattlers were found at Highpoint when the 210 Saddle Club riders stopped for lunch. Needless to say, there was much scurrying and hurrying for safer ground. One Rocky Mountain rubber boa was observed on the tour road at Highpoint.

I. Diseases

1. Buffalo

On April 10, while making a range inspection, several yearling bison were found in a paralized condition in Alexander Basin. The animals were heavily infested with engorged ticks, particularly in the neck region and at the base of the skull. An intensive search over the next several days produced two dead and seven living, but paralized yearlings. The animals were brought into the barn at Headquarters where ticks were removed, the neck hair clipped and insecticide applied. Dr. Keyser, local Veterinarian, treated all animals with antibiotics and saline solution. Most were on their feet from 12 - 36 hours after treatment and all recovered. This was the first reoccurance of tick paralysis since 1951.

A few days later a two year old cow, bleeding at the nose and eyes, was brought into the corrals at the slaughterhouse. The animal died the following day and was "posted" by Dr. Keyser, the local veterinarian. He found heavy sub-cutaneous, pelvic and organic hemorrhage and suspected Clostridium. Tissue analysis showed "abundant Clostridium multifermentans (not pathogenic by itself) and C. feseri (cause of blackleg)". No cause of death was determined. However, the herd is being closely watched for further symtoms of blackleg. Dr. Corcoran, U.S.D.A. Veterinarian, feels there is insufficient evidence to justify vaccinating for this disease.

A yearling heifer with an abcess on the hip was brought to the corrals and successfully treated. Another sick yearling heifer with swollen joints was treated several times with antibiotics and held in the corrals for over a month for observation. Little response was noted. She finally escaped and joined the herd, apparently recovered as no sick or weak yearlings were noted at roundup.

The heifer calf born in the exhibition pasture was successfully treated for a navel hernia.

All buffalo calves were vaccinated for Pasturella multocida this year for the first time. Vaccine was prepared by Dr. Kenneth Heddleston of the U.S.D.A.'s National Animal Disease Laboratory, Ames, Iowa.

2. Elk and Deer

Two Whitetail deer were found with tick paralysis during the

outbreak involving buffalo. One was found dead and the other was alive and brought in for treatment. It had been badly mutilated by magpies and did not recover.

Blood serum samples were submitted for testing from all elk and deer collected during the fall disposal program. All samples tested negative for Brucellosis and Leptospirosis. Anaplasmosis tests showed three anticomplementary reactions in deer and one suspected reactor in elk. All others were negative.

3. Bighorn Sheep

A ewe with a large lump on the lower jaw was noted on several occasions this summer. She was in poor condition, but still able to feed; however, by September it was obvious the animal would not survive. Montana Cooperative Wildlife Research Unit personnel assisted in immobilizing the animal for closer inspection and, due to it's poor condition, the animal was purposely over-drugged and killed. The body weight was approximately 80 pounds and all the lower inscisors were gone. The carcass was taken to the Veterinary Research Laboratory in Bozeman for necropsy and disease analysis. Their diagnosis was Malignant melanoma. We have been assured that the condition is not contagious to the other members of the herd.

4. Antelope

Two animals in the exhibition pasture developed foot-rot this summer. The buck was immobilized and treated but had an advanced case and died the following day. Another buck and a doe were trapped in the bison corrals and released in the exhibition pasture. Two weeks later the doe broke her neck in a fence corner, and was found to have an advanced case of foot-rot.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Refuge Work Programs

a. Fence Construction and Repair

A fence, 220 rods in length, was rebuilt on the east side of Elk Lane, extending from Sixgates to the bison corrals. Wooden posts were replaced with steel and the gates rebuilt. Existing wire was salvaged and re-used. Thirty-three rods of division fence within the holding pens was reconstructed.

The three-quarter mile of barbed wire fence, running from the contour fence above Agency Springs to the west boundary fence, was covered with 47", #9 woven wire. This portion of fence receives extreme pressure when bison are in pastures on both sides of the fence. The woven wire should eliminate the frequent maintenance necessary to keep it effective.

The 12' x 8' cattle guards, installed to facilitate the self-guiding tour, have proven ineffective in preventing bison movement. One guard, located in Alexander Basin, was extended by installing a 12' x 6' guard in conjunction with the existing one. It was necessary to construct end wings for this over-sized structure.

The lower Mission Creek flood gate was renovated by replacing the old wooden stringer with a 21 inch steel I-beam obtained from surplus sources. The existing gates were salvaged and re-used for this structure.

The pipe corrals, constructed in 1968, were sand blasted to remove the rust scale. After cleaning, they were coated with a rust preventative paint. Prior to roundup, corrals were checked and repairs made as needed.

A 107 rod section of contour fence located west of the bison corrals was relocated. This was accomplished to provide water in the northeast portion of the lower west pasture. Better grazing distribution is anticipated in this pasture.

A 20 rod section of fence was constructed to eliminate congestion and over-use in the corner of the division fence between the Alexander Basin and lower South ranges.

The entire 23 mile boundary fence and all interior fences were checked and repairs made as required. This was accomplished during periodic patrols.

b. Roads and Bridges

All refuge patrol roads and the self-guiding tour route were bladed to remove oversized rock and annual weed growth. The rock rake was used on the tour road to move gravel back onto the traveled surface. The perimeter road was again bladed in late summer to remove vegetation and form a more effective fire break.

A washout occurred in the north boundary road during spring run-off. A total of 56 cubic yards of fill was hauled to repair the damages.

The Bureau rock crusher was moved from Tule Lake Refuge to the Bison Range in April, following an agreement with Kickinghorse Job Corp. They were to assemble and operate the machine as one of their training projects. The gravel was to be spread on our tour route as part of the program. By mid-fall the machine was set up and ready to run. Job Corp, or the Northwest Indian Manpower Skill Center (after July 1), personnel soon found more pressing business elsewhere. The Bison Range inherited the machine operation and two men were assigned the task, when other duties permitted. At the end of the year, approximately 2000 cubic yards had been crushed, at a cost of $1.52 per yard. We found time to haul and spread 600 yards in the lower Pauline area. This was applied three inches deep on the 12 foot surface.

A permanent pipe barrier was constructed at the junction of the road leading to the Highpoint lookout tower.

Piers on the bridge east of the elk pasture were seriously undercut during spring run-off and 48 cubic yards of large rock rip rap was placed there to alleviate this condition.

c. Building Maintenance

Quarters No. 62: The interior was completely painted, prior to the arrival of the new manager. Sagging floors were leveled and braced.

Quarters Nos. 63 and 64: The interior of these residences were painted. New linoleum was installed in the kitchens and the roofs of both houses were completely rehabilitated by removing the old wooden shingles, wheathing with ½" plyboard and installing stick-down type asphalt shingles.

Building No. 4: The office roof received the same treatment as Quarters 63 and 64. The three front rooms were painted and shelves constructed for book storage.

Building No. 7: This building, built in 1919 and used for various purposes, including a blacksmith shop, coal storage and warehouse, was razed and removed from property. It was in an extreme state of disrepair and not feasible to maintain.

Building No. 73: The old asphalt shingles were removed and replaced with 230-pound stick tab asphalt shingles.

Building No. 9: The wooden shingled roof, constructed in 1924, was stripped and covered with galvanized metal roofing.

Quarters Nos. 2 and 3: These buildings were declared surplus to the refuge needs and were sold under informal bid to K. C. Dunnwebber of Charlo for $76.00 and $154.00, respectfully. They were removed from the refuge during the month of August.

Building No. 18: This building was the garage for Quarters No. 2 and was also declared surplus and sold. It was purchased by Grant McPherson of Dixon for $301.10. The building was removed in the month of September.

d. Automotive Equipment Maintenance

Major repair and maintenance work accomplished included: fabrication of anti-roll bars for the Ford backhoe, I-49822, the Ford Ferguson, I-49886 and the Farmall, I-49429; repainting the horse trailer; building a SAFETY shield for drive belts on the rock crusher; cleaning, sanding and painting the Hobart welder;and replacing rear differential gears and bearings and relining brakes on the Ford 4 x 4, I-75650. Also included was the repair of the starting

system on the TD 18A, I-89242; helping to assemble, adjust, and operate the rock crusher in cooperation with the Manpower Skill Center; and performing necessary repairs and adjustments for 5000 mile preventative maintenance checks.

e. Miscellaneous

The old foundations of Quarters 2 and 3 were removed and the basements filled with approximately 300 cubic yards of fill.

Two pit-type latrines were installed near the bison corrals, for public use. These structures sere obtained as surplus from the Job Corp, prior to July 1.

A total of 1630 bushels of barley was hauled from Kootenai Refuge and stored for winter feeding and banding operations at the Bison Range and Ninepipe.

Hay meadows and exhibition pastures were irrigated and fertilized as required. A total of 49 tons of hay was harvested and stored in the horse barn for winter use.

All signs used on the self-guiding tour route were refinished with a penta base redwood stain. Several new signs were constructed and placed where needed.

Five stand pipe type water supplies, located in the picnic area, were replaced with a rustic post type, as pictured in the photo section.

Cleanup, mowing and maintenance of the Headquarters grounds and picnic area required a considerable number of man hours, especially during the tourist season.

A spring was developed, west of the bison corrals, by constructing a concrete collecting box and piping collected water a distance of 450' to a previously constructed cement trough. This project more than doubled the flow into the trough and should provide ample water in this area of the lower west pasture.

A 42' x 30' picnic shelter was constructed by Job Corp. This was the last cooperative project completed by that agency.

B. Plantings

1. Trees and Shrubs

None.

2. Upland Herbaceous Plants

Approximately four acres of bare and eroded areas within the exhibition pastures were seeded with Western wheat grass - Alta fescue mix. It was first mulched with barnyard manure and waste hay.

C. Collections and Receipts

1. Seed and other propagules

Two hundred pounds of Timothy seed were received from Kootenai Refuge in September.

2. Specimens

The following specimens were collected during the year:

Whistling Swan	1	Frozen
Sparrow Hawk	2	"
Gray Partridge	1	"
Killdeer	1	"
Long-eared Owl	1	Museum mount
Pileated woodpecker	1	Frozen
Lewis' Woodpecker	1	"
Dipper	1	"

All specimens were found dead and frozen for future mounting and display in the proposed visitor center.

D. Control of Vegetation

1. Biological Control

The goatweed beetle, Chrysolina quadrigemina, population remained at a very low level. Control of goatweed by beetles during this period was insignificant and the plant continued to spread in areas that were free of chemical control.

2. Chemical Control

Canada thistle control was continued, using ground spray equipment, with efforts concerntrated on infestations along roadsides, canal banks and etc. Initial results appeared good, with an apparent kill of 90 - 95%.

Aerial spraying to control goatweed was continued. A helicopter was contracted to apply spray to areas in the upper and lower west pastures. The terrain in these areas makes it impractical to use ground equipment or fixed wing aircraft. The chemical was mixed at one gallon of 2,4-D amine to three gallons of water and applied at the rate of two pounds acid equivalent per acre. A total of 882 acres was treated and the initial results appeared to range from 75% to 90% kill.

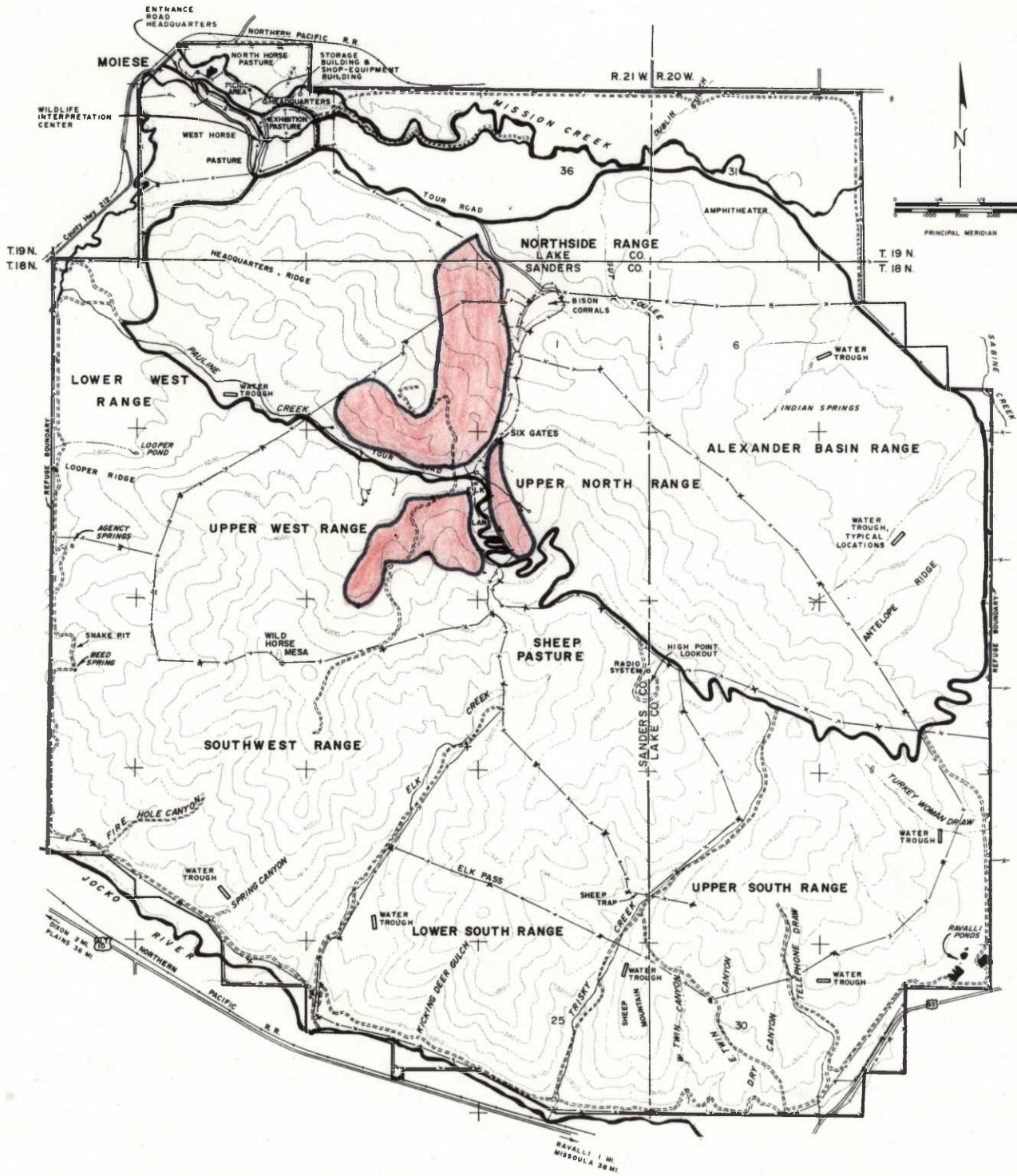
E. Planned Burning

None.

F. Fires

None.

1969 AERIAL GOATWEED SPRAYING



PROPOSED PLAN

MONTANA NATIONAL BISON RANGE

Moise, Montana

IV. RESOURCE MANAGEMENT

A. Surplus Buffalo Disposal

1. Live disposal and meat sales

Seventy-nine animals were sold alive, on the basis of a sealed, competitive bid sale, as in 1968. A total of 25 bids was received, with the bid awards to eleven buyers totaling $29,109.84, or an average of $368.48 per animal, as summarized below:

Number	Age Group	Total Bids	Ave/Animal
36	Yearlings	$13,525.82	$375.71
6	Two-year olds	2,547.22	424.54
1	Three-year olds	479.00	479.00
3	Six-year olds	1,289.40	429.80
14	Eight + cows	5,268.40	376.31
19	5 - 10 yr. bulls	6,000.00	315.79
TOTAL 79		29,109.84	368.48

Buyers names and the number of animals they purchased follows:

Jim Burnett Luther, Montana 5	W. O. Oleson Moscow, Idaho 1	B. L. Tiffany LaFayette, New York 22
Bob Fieber Siletz, Oregon 1	R. J. Gress Ennis, Montana 6	Tom Collins Missoula, Montana 1
Diane Rubino San Jose, Calif. 1	Harold Wright Heppner, Oregon 1	Don Hight Murdo, South Dakota 19
Durham Meat Co. Gillette, Wyo. & San Jose, Calif. 16	Don Hanscom Gold Rey Ranch Central Point, Ore. 6	

The live sale was again successful and the butchering program, except those animals taken for humane reasons, was discontinued. Meat from collected animals was donated to local schools for use in their hot-lunch programs. Most of the meat is distributed to the schools through BIA, Ronan.

2. Sale and Donation of Hides and Skulls

Seven hides and six skulls from the 1968 disposal program were sold. A buffalo cow hide sold for $78.85 and a bull skull for $121.15. One buffalo calf skull was donated to the Dept. of Zoology, University of Montana, Missoula.

B. Surplus Elk and Deer Disposal

1. Meat disposal

Twelve elk and 126 deer taken during the fall disposal were distributed to Montana schools for use in the hot lunch program. One elk was again sold to the Lake County 4-H Council Junior Fair, in accordance with prior authorization. A handling charge of 15¢ per pound of dressed meat was charged to help defray collection costs. Estimated comparative annual costs for this program are summarized below:

	DEER				ELK			
	1966	1967	1968	1969	1966	1967	1968	1969
Cost/Animal	12.86	11.77	17.27	25.60	35.14	20.53	32.86	52.64
Rev./Animal*	5.94	8.48	17.19	16.70	27.65	34.12	41.77	49.01
Difference:	-6.92	-3.29	-.08	-8.90	-7.49	13.59	8.91	-3.63

*Includes handling charge plus average receipts from hide sales.

As shown in the table, cost of collection, per animal, was extremely high this year. The primary reason is contributed to the nice weather requiring extra hunting time to fulfill quotas. Normally the 15¢ handling fee should cover costs. An increase in the fee will be assessed if the program continues to operate in the red.

2. Sale and Donation of Elk, Deer and Antelope Hides and Skulls

A total of 17 elk hides, 98 deer hides and 27 deer antlers from the 1968 program were sold.

Donations included one cow elk skull and one male antelope skull to Western High School, Anahiem, California; a white-tail doe and a whitetail buck skull to Ogden High School, Ogden, Utah; an antelope buck skull to Eastern Michigan University, Ypsilanti, Michigan; and an antelope buck skull and a badger skull to Brookings Harbor High School, Brookings, Oregon.

C. Proceeds of Sales

Total receipts from sales for the period January 1 through December 31, 1969 were as follows:

Live buffalo	$29,109.84
Deer and Elk Meat	2,349.75
Buffalo hides	262.85
Elk hides	80.46
Deer hides	230.93
Skulls and antlers	335.83
Employee's horse grazing fees	48,00
Marsh concession	656.03

Golden Eagle Passports	1,400.00
Daily entrance permits	3,424.00
Sale of surplus, used property	565.78

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Bison Age-Weight and Longevity - Refuge Personnel

The following table is primarily for the records. Our objective is simply to determine the age animals start decreasingin weight or what age they reach and maintain their peak weights, plus the longevity of each sex. It appears premature to attempt drawing conclusions from the present data.

SEX	YEAR OF BIRTH	DATE MARKED	WEIGHT 10/66	WEIGHT 10/67	WEIGHT 10/68	WEIGHT 10/69
M	1960	7/17/63	1605	1710	Broke leg shot 8/68	
M	1959	7/17/63	1670	—	1610	—
M	1956	7/17/63	1785	1875	—	—
M	1963	7/09/64	1175	1435	1640	1660
M	1963	7/09/64	1150	1335	1485	1550
M	1961	7/09/64	—	1780	1800	1865
M	1958	7/09/64	—	1685	1760	butchered/ bad hip 10/69
M	1964	7/13/64	865	1050	1370	1410
M	1959	10/11/65	1775	1825	butchered/ bad eye 12/68	
M	1963	10/11/65	—	1335	1465	1680
M	1959	10/11/65	1640	—	1790	—
M	1965	10/11/65	730	1005	1430	1660
M	1959	10/11/65	Accidently butchered in 1966			
One marked animal never found again.						
F	1963	7/09/64	No record since marked			
F	1956	7/09/64	910	—	—	—
F	1959	7/09/64	1060	1015	1070	1030
F	1957	7/09/64	1080	1015	1095	1125
F	1954	8/13/64	No record since marked			
F	1964	8/13/64	800	830	—	—
F	1955	10/11/65	900	—	980	1020
F	1955	10/11/65	1010	1035	1000	1060
F	1952	10/11/65	—	—	—	925
F	1965	10/11/65	610	820	875	925
F	1950	10/11/65	—	935	—	—
F	1954	10/11/65	1090	1070	1045	—

B. Buffalo Measurements - Refuge personnel

None taken this year.

C. Buffalo Pregnancy and Lactation - Refuge personnel

This study was terminated when the butcher program was discontinued in favor of live sales.

D. Range Condition and Trend - Refuge personnel

One Parker 3-step transect cluster of five transects was added to the 20 previously established. Plans call for at least three clusters in each pasture or a total of 24. Transects located in the pasture receiving fall use will be read each year; this provides a four year cycle.

E. Waterfowl Banding - Refuge personnel

Post season banding at Bison Range Headquarters netted 435 Mallards and three Canada geese.

On June 30 and July 1, Bison Range personnel cooperated with U.S.G.M.A. Brann and Montana Fish and Game in drive trapping 185 Canada geese at Ninepipe Refuge and on Flathead Lake.

Pre-season Mallard banding was conducted at Pablo Refuge in conjunction with Montana F & G goose banding operations. A total of 945 Mallards and 300 Pintails was cannon-netted. Cost was slightly over $.48 per bird. The State goose banding project was unsuccessful.

Forty-one returns were taken during post season operations. None had made previous returns. Numerous recovery reports were received during the year, although none were particularly significant. Recovery data, compiled through the years, has become so voluminous it is too cumbersome to analyze. Plans are to put it on a simple punch-card retrieval system in the near future.

F. Behavior of Cow and Calf Bison - Joseph Englehard

Thesis completion was scheduled for January 1969 but was not received by year's end.

G. A Study of the Abundance and Distribution of Rodents in Relation to Grassland Vegetation Type on the National Bison Range - Melvin Morris

The objectives of this study are (1) to determine species and density (number) per acre of mice and pocket gophers by major grassland types (five types); (2) to determine species and density per acre on paired excellent condition range and weedy types for each of the five major grassland types; and (3) to determine species and density of paired weedy types as is, with litter removed. No information is available for this report.

H. Refuge Herbarium - Dr. John Thomas

The over 400 plants collected by Dr. Thomas, Carol Bromley and Refuge personnel have been classified and filed in the herbarium. Dr. Thomas' report, "Vascular Flora of the Bison Range", has not been completed.

I. Behavioral Aspects of the Rut in American Bison - Dale F. Lott

The primary focus of this research has been agressive interactions in mature male American Bison. A preliminary description of this behavior occurs in the reports of McHugh (1958) and Fuller (1960). These descriptions have been considerably amplified during the last four summers' research. The major amplification has been in recording the occurrence of a broadside threat posture in addition to the head-on threat described earlier, plus the first report of a submission signal. This aspect of the research has been reported (all illustrated by movies) at several professional meetings and invited colloquies. The most recent (and most comprehensive) report was made at the meeting of the American Association for the Advancement of Science, on December 29, 1969. A manuscript on this topic is currently being prepared for submission to Animal Behaviour.

The secondary focus of the research has been sexual behavior. A complete description of copulation in this species has not been available in the scientific literature. The available description (McHugh, 1958) is based on a total of six instances. Since I have observed dozens of copulations I am in a position to amplify McHugh's description considerably and eventually will do so. But my research has been slanted more toward understanding the effect of sexual behavior on social relationships in the herd, than toward a bare description of the behavior itself. To date the most complete and successful work along this line consisted of following five naturally marked cows through the rut and recording, several times each day, whether or not they were accompanied by bulls. These records permit the description of the effect of estrus on the attractiveness of the cows. This study is so simple-minded as to seem hardly worth doing, nonetheless the results proved it very valuable. It refuted the general assumption that the attractiveness of the cows was entirely a function of their estrus condition. Some cows attracted little attntion from bulls even during the peak of heat, while others had large followings day after day despite a complete absence of indications of heat, and very low tolerance for breeding efforts by males. This is one of the few bits of evidence for evolution by sexual selection in female mammals and is a valuable addition to that area of knowledge.

NOTE: The above abstract was written by Dr. Lott.

J. Comparative Aspects of Social Organization of American Bison - David M. Shackleton

This M.S. thesis was published by the University of Western Ontario, London, Canada, in August 1968 but was not received in time

for inclusion in the 1968 narrative. Following is the abstract of this thesis. A copy is on file at refuge headquarters.

The social organization of bison was studied at Elk Island National Park, Alberta and at the National Bison Range, Montana. The two areas differ considerably in habitat and in bison management. Elk Island National Park is heavily wooded with scattered meadows, while the National Bison Range is open Palouse Prairie. The Elk Island animals have free range of the area, while the Bison Range animals are intensively managed in a deferred rotation grazing program. Bison were observed to form two group types, mixed and bull groups, for most of the year. At Elk Island, the mixed groups were small, commonly 5 to 20; these groups often forming larger groups on the meadows. Large mixed groups of 100 to 150 animals at the Bison Range were believed the result of management practices and the open habitat. Bull groups used a larger area than the mixed groups. In both study areas the bull groups ranged from lone and paired animals to 20 to 30 bulls, composed of three year and older animals. The beginning of the breeding season (August) marked the break-up of bull groups and the entrance of individuals into the mixed groups. Sub-adult bulls were observed in the mixed groups before the adult bulls. The presence of cows in estrus in mixed groups appeared to be a factor in the movement of bulls into these groups. During the breeding period a number of sub-groups of adult cows with calves less than ten weeks old were observed. Reactions of adult bulls to cows with young, compared to behavior toward other cows, suggested the cows with young calves were not in heat. It is possible that lactation delays the onset of oestrus.

K. A Study of the Social Behavior of the Pronghorn Antelope - David Kitchen

The purpose of the study is to describe and analyze the social behavior of the Pronghorn Antelope and it's relationship to other animals on the range. So far, 42 behavioral acts have been described, with more observations necessary to quantify preliminary data. Twenty-two of the 41 fawns born were eartagged for individual study. The white markings on the Pronghorn's head and neck were discovered to be highly variable. It is possible that individual animals can be identified by this method. Field observations indicate three types of breeding behavior in rutting bucks; territorial, harem and tending bond during the actual breeding season.

Pronghorn and buffalo use similar habitat but with considerable antagonism between species. When bison feed into an area used by Pronghorn, the antelope leave. Antelope are nervous around bison and are occasionally chased. Antelope and White-tailed deer demonstrated a high level of behavioral antagonism, with both reacting aggressively when approached by the opposite species. Bighorn sheep, Mule deer and Elk used different habitat types so little competition was noted. So far the study has indicated both habitat selection and antagonistic behavior play a role in the separation of some of the species. The full degree of ecological separation requires further study.

The preliminary report is included at the end of the report.

L. Archaelogical Survey of the National Bison Range - Cecil D. Barnier

During the summer, Cecil D. Barnier, a work-study employee from the University of Montana, conducted an archaelogical survey of the refuge. He located and recorded seven sites; three possible eagle catch pits, two campsites and two placer mine sites. A collection of artifacts, found approximately ten aerial miles northeast of the refuge, was donated to us. The points were all analyzed and some date back to 2000 to 7000 B.C. For further detail see the attachment at the end of the report.

VI. PUBLIC RELATIONS

A. Recreational Uses

This year's public use increased 13%, from 69,000 to 79,400 actual visits. June, July and August accounted for 59% of the total, or 47,000 visitors. The peak load day was July 26 with over 1200 tourists. January was again the record low month with only 200 visitors. Forty three percent (33,800) took the 19 mile self-guided auto tour. One day, 425 cars were recorded making the trip.

The self service $1.00/car fee for the tour and the Golden Eagle passport were favorably accepted. Many people were disappointed to hear the passport was to be discontinued. A limited sample during two week days showed that 70% of the cars were from out of state.

With public use of this magnitude it is becoming increasingly important to develop facilities to adequately handle them. Tourism is following the pattern predicted in the Master Plan but development of public facilities is lagging.

B. Refuge Visitors

Jan. 8 Ashton Brann, M&E, Helena (numerous visits)
Jan. 24 Don Dodge, Missoula, photographer (photos)
Jan. 24 Norton Miner, Wildlife Services, Billings (numerous visits)
Feb. 28 Bob Blom & Norman Warneke, Malheur Job Corp (courtesy visit)
Apr. 11 Gordyn Crofoot, Arlee; Orin Scammon, St. Ignatius; & Ken Esterby, Charlo (plans for annual Saddle Club Ride)
Apr. 14 K.D. Swan & Ralph Hand, Missoula, photographers & writers (numerous)
Apr. 18-20 Leon Stumpff, Bend, Oregon, photographer (numerous visits)
Apr. 22 George Buckovatz, U.S. Marshall (looking for Job Corp enrollees)
Apr. 25 Charlo Biology Class, 37 students (tour)
Apr. 29 Ben Gates, Employment Service, Polson (numerous visits)
May 2 Coeur d'Alene Junior College, 17 students (tour)
May 3 Lima 2nd & 3rd grades, Lima, Montana, 35 students (tour)
May 5 Columbia Falls High School, Montana, 50 students (tour)
May 5 Dr. Baily & Professor King, University of Montana (courtesy)
May 6-7 Mr. & Mrs. John Fowler, Kelly, Wyo., (photos)
May 7 Proctor School, Montana, 17 students (tour)
May 9 Jay Fleming, Ed Case, Dick Morrison, Larry Barkes, NASA, Radiation, Inc., Florida (discuss elk tracking project)

May 9 Dr. Bart O'Gara, Coop. Research Unit, U of M (numerous visits)
May 9 Special Education Classes of Lake County, 50 students (tour)
May 9 Mr. & Mrs. Larry Barsness, University of Montana (photos)
May 12 St. Ignatius 8th grade, 30 students (tour)
May 14 St. Ignatius Geology class, 40 students (tour)
May 15 Polson 5th grade, 60 students (tour)
May 17 C. R. Smith & Herbert Wellington, Washington D.C. (courtesy)
May 17 Prof. Mel Morris, University of Montana (numerous visits)
May 17 Joe Zacek, S.C.S., Missoula (numerous visits)
May 19 Polson Government Class, 80 students (talk)
May 21 Ronan 4th grade, 60 students (tour)
May 22 St. Ignatius High School, 40 students) (tour)
May 22 West Glacier 3 and 4th grades, Montana, 17 students (tour)
May 22 Ronan 1st grade, 50 students (tour)
May 23 St. Ignatius 1 - 4th grades (picnic)
May 29 Cherry Valley 5th grade, 31 students (tour)
May 25 Saddle Club Ride, 210 riders
June 19 Larry Osburnsen, Louis Moos, Rich Hager, Bob Ross S.C.S. (range)
June 19 Dan Jones & Bob Garthwaite, New York, NBC (film Charles Russell doc.)
June 19-20 Dr. & Mrs. William Parker, Hightstown, New Jersey (photos)
June 20 St. Ignatius Head Start class, 25 students (tour)
June 21 Gentlemen on Horseback, Spokane, Washington (ride on range)
June 23 Tom Smith, Realty, Portland & Bob Miller, Glasgow, Wetland's Acquisition (discuss Pablo & Flathead Lake)
June 24 Bill Bair, Upham, N.D., Biologist (courtesy)
June 24 Stan Federman, Portland Oregonian, writer (courtesy)
June 24 Thompson Falls grade school students, 12 (tour)
June 27 Dwight Stockstad, Art Brackebusch, Hal Anderson, U.S.F.S., Missoula, and Phil Cheney & Romo Paehban, Melbourne, Australia, Forest Research Institute (courtesy)
July 1 123rd Scout Troop, Calgary, Alberta (tour)
July 10 Don Meier, Marlin Perkins, Stan Brock, Ace Moore, "Wild Kingdom", (filming for TV show "Wildfire")
July 14 Troop 679, Bozeman, Montana (tour)
July 15 Mr. & Mrs. Allan Cruikshank, Fla., Audubon Society (photos)
July 20 Ronan 4-H group, (tour)
July 24 Bob Carroll, Helena, F & G, I & E, (photos)
July 24 YWCA group of 45 (tour)
July 29 Larry Linnard, Maumee, Ohio (photos)
July 29 Mr. & Mrs. Dave Wood, Montrose, Colo., writers (photos)
July 31 Bill Browning, State Chamber of Commerce, & George Laycock, Cincinnati, Ohio (photos)
July 31 Newport, Washington Freshman & Sohpomores, 18 (tour)
July 31 Dr. Harold Heady, U. of Calif, Range Mgt. (range study)
July 31 Donald B. Hyatt, Budd Wilds, Simon Avnet, Thomas Landi, NBC, New York (filming "West of Charles Russell" documentary)
Aug. 1 Jim Ludwig, U. of Alaska, (working on film on Blackfeet Indians)
Aug. 7 U. of Montana Indians, 10 (tour)
Aug. 17 Joshua Zulu, Mekuris Tafesse; Ethipia, Kiruthin; Kenya, K. K. Karam; Ghana, C. L. Kabenji (all African students) & Jack C. Dodd, escort (Interior Dept. tour)
Aug. 18 Mr. & Mrs. John Hurchens, Rye, New York, writers (photos)

Aug. 20 Erwin Bauer, Ohio, writer (photos)
Sep. 10 Lark Productions, California (filmed for lecture tour)
Sep. 18 High School Forestry group of 30 (tour)
Sep. 24 Noxon 5th & 6th grades, 24 (tour)
Sep. 23-25 Jack Waddell, Jim Lankford, O&M inspection
Oct. 6--7 Steve Moore, AP, Helena & Harley Hettick, Missioulian, (pictures and story of roundup)
Oct. 6 Larry Barness, U of Montana,(photos of roundup)
Oct. 6 Bob Woods, Kalispell, artist (photos of roundup)
Oct. 6-7 Marge Anderson, Ronan, Missoulian correspondent (story of roundup)
Oct. 6 Special Education, Missoula, 40 students (roundup)
Oct. 7 St. Matthews School, Kalispell, 6th, 7th, 8th grades,70 (roundup)
Oct. 7 Mt. View School, Missoula, 12 students (roundup)
Oct. 7 Evergree 8th grade, Kalispell, 76 students (roundup)
Oct. 7 Special Education, St. Ignatius, 16 students (roundup)
Oct. 11-12 Montana State University Range group w/Don Ryerson (range study)
Oct. 30 Ken Greer, F & G, Bozeman, (elk and deer blood & etc. samples)
Nov. 2 U of Montana Wildlife Club, 30 students (tour)

Numerous visits were made during the year by local personnel from Wildlife Services, Soil Conservation Service, Bureau of Indian Affairs, Bureau of Reclamation (irrigation & power), Tribal Council, State Fish and Game, County Extension office and Fisheries Services.

C. Refuge Participation

Kaschke

Feb. 6 Gave presentation on Big game management to 30 big game students at University of Montana.
Mar. 11 Attended Technical Action Panel meeting in Kalispell.
Mar. 18 Attended annual state Fish and Game coordination meeting and Refuge Managers workshop in Helena.
Apr. 21 Assisted Polson Outdoors Club w/installation of goose nests at Pablo.
Apr. 23 Conducted tour of Ninepipe for Missoula Garden Club.
Apr. 24 Attended Salish-Kootenai Tribal Council meeting concerning recreation developments at Ninepipe and Pablo.
Apr. 26 Attended Polson Outdoors annual banquet and meeting.
Apr. 29 Presented talk to Wildlife Club (20) at University of Montana.
May 6 Keynote speaker at Charlo High School Honor Society initiation.
May 27 Appeared with Extension Agent Bratton on 15 minute TV program for KGVO, Missoula.
June 6-8 Attended annual Wildlife Federation meeting in Laurel, Montana.
July 4 Assisted Charlo Lions Club with fireworks display for community.
July 26-Aug. 3 at Charles Russell Wildlife Range assisting with orientation of new Range Conservationist, Bill Krantz.
Aug. 28 Presented hour program to Polson Lions Club.
Sep. 10 Attended banquet meeting of Wildlife Federation Recreation Coordinating Committee.
Sep. 23 Meet with Science teachers attempting to establish programs for various age groups.
Sep. 25 Presented 30 minute TV program for KCFW, Kalispell.
Oct. 11-12 Conducted two day tour for 20 range managenent students from Montana State University, Bozeman.

Oct. 28 Presented slide program to University of Montana Wildlife Club (70).
Nov. 20 W/Barber, participated in Federal Career Day at the U of Montana.
Dec. 4 Attended Missoula Federal Businessmen's Association noon luncheon in Missoula.

Also attended four monthly meetings of Western Montana Fish and Game Executive Committee throughout the year and attended bi-weekly meetings of Charlo Lions Club. Conducted numerous school tours, participated in two Saddle Club rides and conducted numerous tours and interviews for writers, artists and photographers.

Barber

Feb. 17 Attended Science Fair Judges orientation, Ronan.
Feb. 19 Attended Financial Aid Workshop (work-study), Missoula.
Feb. 22 Judged at Ronan Science Fair.
Mar. 17 Talk and film for 440 St. Ignatius students - "This is a Mallard".
Mar. 17 Talk and film for 100 Dixon Students - "This is a Mallard".
Mar. 18 Attended Lake Co. Conservation Day - Polson.
Mar. 19 Talk and film for 350 Arlee students - "This is a Mallard".
Mar. 20 Talk and film for 27 Moiese students - "This is a Mallard".
May 25 Rode in annual Saddle Club Ride.
Jun 9 Slide talk for NYC organizational meeting, St. Ignatius.
Jun 18 Talk and tour for 20 member of Missoula Garden Club.
July 4 Assisted with Charlo Lions Club community fireworks display.
July 10-15 Assisted with filming of "Wild Kingdom" series.
July 31 Interviewed on KGVO radio "Travel Time in Montana."
Nov. 20 W/Kaschke, participated in Federal Career Day at the U of Montana.
Dec. 9 Slide talk for Charlo Lions Club
Dec. 15 Assisted in Christmas Decoration of Charlo w/Lions Club.

Also attended regular meetings of Charlo Lions Club. Conducted numerous school tours and tours and interviews for writers, artists, photographers.

May

Mar. 18 Showed movie "This is a Mallard" to Charlo School.
May 25 Rode in annual Saddle Club Ride.
Jun. 9 Helped present slide talk for NYC organizational meeting.
Jun. 12 Interviewed by David Dary, writer.
June 21 W/Gentlemen on Horseback, tour of range.
July 10-15 Assisted with filming of "Wild Kingdom" series.
Sept. Conducted N.R.A. Hunter SAFETY Course.

Attended regualr meetings of Masonic Lodge and Charlo PTA. Conducted numerous school tours and interviews for writers, photographers.

Hogge

Served on Boy Scouts Council for National Jamboree Committee.
Chairman of Boy Scout District Leadership Training.
Served on Boy Scouts Council for Leadership Training Committee.
Chairman of School Board District #28 and on School Board Personnel Policy Committee.
Conducted various refuge tours for school groups, writers and photographers.

Kraft
Organized and directed a "Laugh In" variety show for the Charlo PTA fund raising drive. Served as director for summer recreation program for 100 school age children. Coached one baseball team. Conducted various tours for school groups, writers and photographers.

Krantz
Presented slide talks for Ninepipe 4-H Club, St. Ignatius Jaycees and Ronan Boy Scouts. Conducted numerous on-refuge tours for school groups, photographers and writers. Member of Moiese, State and Pomona Grange, Lake Co. Development Council. Rode with Gentlemen on Horseback.

Middlemist
Served on School Board for District #9, 4-H leader and member of 4-H Council for Sanders County.

Scammon
Showed Bison Range movie to Jocko Rangers 4-H Club. Conducted two on-refuge tours for school groups. In the Regional Office for four-day orientation and training session in May. Took part in Defensive Driving Course. Participated in St. Ignatius Jaycee - Jayceen activities and projects. Rode in annual Saddle Club Ride.

Publicity of the Bison Range and activities was again astounding. Three national TV shows, NBC's Animal World and "The West of Charles Russell and Mutual of Omaha's Wild Kingdom, depicted scenes or mentioned the area. An Associated Press release of the roundup by Steve Moore was carried in many leading newspapers throughout the United States. We have received clippings from 25 papers, including the Stars and Stripes. One article and a list of the papers from which clippings were received are included at the back of the report. All releases were similar. Many well known photographers, writers and artists also visited the area.

Refuge personnel made periodic news releases to local papers and appeared on local TV and radio programs, as shown above.

D. Hunting

There is no public hunting on the Bison Range. General waterfowl and upland game bird hunting conditions in the Flathead Valley have been discussed in the Nnepipe and Pablo narrative report.

E. Fishing

High and muddy water periodically throughout the summer made fishing on the Jocko difficult. This fine trout stream is continually being straightened and altered by adjoining land owners. We have dozed some large boulders into straightened stretches and find it soon provides excellent fish habitat. Plans are to continue this habitat work. An estimated 2150 man days of fishing was recorded on the portion flowing through the Range but outside of our fence. Fishing could be described as good when water was clear.

F. Violations

The only known game violation was during early October, when one evening a passing motorist shot a fawn deer from the road. Foreman May heard the shot but was unable to get to the scene quick enough to apprehend the violator. Refuge personnel hid nearby in hopes they would return to get the trophy 26 pound fawn. Unfortunately, they never returned.

G. SAFETY

Scheduled SAFETY meetings and the main topics of discussion were as follows:

Jan. General SAFETY practices were discussed, including ice and snow covered walks and driveways. Chances of carbon monoxide poisoning in winter weather were also discussed.

Feb. "Ice Rescue", an article from Family SAFETY was reviewed. SAFETY precautions for the winter were discussed.

Mar. The psychological attitude of SAFETY was the main topic. Articles entitled "Panic Preventors" and "18 Ways a Good Supervisor Puts SAFETY to Work" were reviewed.

Apr. Primary and potential poisons were the main subject. The importance of labels and keeping medicine and household cleaners out of reach of children was discussed.

May Refuge fire plan and fire fighting agreements and policies were discussed. A briefing was held on the operation of fire fighting equipment.

June The film "Everywhere, All the Time" was viewed and discussed. Also discussed were causes of farm accidents.

July Water SAFETY, including boating and swimming and related hazards, were the main topics. The station fire plan was discussed, with emphasis on fire drill procedures.

Aug. An article entitled "Are You Accident Prone", from the Readers Digest, was reviewed. An accident involving a refuge vehicle and employee was discussed.

Sept. The film "Wheels of Tragedy" was shown and discussed. SAFE driving practices were reviewed.

Oct. Hunting SAFETY was the main topic. An article from Family SAFETY was discussed.

Nov. SAFE winter driving practices were the main subject. A general discussion of hints and personal experiences followed.

Dec. Fire dangers in the home was the topic. A demonstration was presented, showing what happens when a fire begins in a house.

While closing the tour route August 4, our student trainee decided to take a side trip to Ravalli Ponds to prevent hurrying a group of tourists ahead of him. He had proceeded about 100 yeards on the detour and saw an object in the road. He stopped and walked back to get the item. The vehicle was left in fourth gear instead of second and the emergency was not on. The unattended pickup rolled about 300 yards, went into a gully and flipped over. Fortunately no one was injured but it cost nearly $600.00 to repair the vehicle.

VII. OTHER ITEMS

A. Items of Interest

1. Training

Mar. 17-21 - Hogge attended a five day Heavy Equipment school at Kinkinghorse Job Corp Camp, conducted by GSA.

May 12-15 - Scammon was in the Regional Office for four days of orientation and training.

July 8 - The GSA Defensive Driver's Training was Attended by Clerk Scammon, Laborers McVey and Wetzel, Work-Study Employees Barnier, Knudsen, Borden and Student-trainee Hedges.

Dec. 19 - Hogge attended a one day training session of field repairs of snow mobiles and overhaul of two-cycle engines. The session was sponsored by Forest Service and conducted by snow mobile manufacturers.

2. Miscellaneous

Robert L. Barber, former Assistant Manager at Benton Lake, accepted the newly established GS-9 Assistant Manager position at the Range. He and his wife, Julie, and two sons, Michael and David, arrived January 9. The Refuge has benefitted greatly with the addition of the Barbers.

Wedding bells were ringing in the chapel on August 8, and this time they were for our Clerk Sharon Oxford, who is now Mrs. Warren Scammon. We wish them a long and successful marriage.

Dave and Lynn Kitchen arrived May 6 to conduct his antelope behavior study. They finally found housing in Ronan and settled for the summer. The Kitchens returned to school at the University of Michigan, October 8.

Bison Range personnel participated in two Saddle Club rides on the Range. One group was the local St. Ignatius club with 210 riders from western Montana. The other was a group from Spokane, Washington with 80 riders. Rides were conducted May 25 and June 21, respectively.

B. Credits

Kaschke - those sections and items not listed below.

Barber - all of part II, Wildlife, part V, J, all NR forms, including typing.

May - all of part III, Refuge Development and Maintenance

Scammon - all of part IV, Resource Management, part VI, B, C, and G. Typed entire report (except NR forms).

All personnel contributed to collection of field data essential to the preparation of this report.

C. Photographs

Credit for the various photographs is given in each caption.

Submitted by:

Marvin R. Kaschke
(Signature)

Refuge Manager
(Title)

Date: _____

Approved, Regional Office:

Date: 2/27/70

(Signature)

Asst. Reg. Ref. Supvr.
(Title)

3-1752
Form -2
(April 1946)

UPLAND GA BIRDS

1613

Refuge National Bison Range Months of January to April, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2,000 A conifer type								50	
Ruffed Grouse	300 A. brush stream bottom								5	
Columbian Sharp-tailed grouse	12,000 A mixed cov.								15	Introduced from Idaho, 04/27/69, 3 female, 12 male.
Ring-necked pheas.	2000 A grassland & bottoms								30	
Chukar partridge	6000 A mixed cov.								20	Severe losses this winter
Gray partridge	12,000 A mixed cov.								500	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form 3-2
(April 1946)

UPLAND G. BIRDS

1613

Refuge National Bison Range Months of May to August, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson Blue Grouse	2000 A Conifer type		5	40					90	Aug. brood size 5.0
Ruffed Grouse	300 A brush stream bottom								5	Two observations
Columbian Sharp-tailed Grouse	12,000 A mixed cover		1 (?)						15 (?)	Several observations of single birds and unconfirmed sighting at 15 + which may have been a brood
Ring-necked pheasant	2000 A grassland and bottoms		1	20					50	Few observations
Chukar partridge	6000 A mixed cover		2	40					60	Aug. brood size 13.5
Gray partridge	12,000 A mixed cover		12	300					1300	Aug. brood size 12.5

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form [illegible]-2
(April 1946)

UPLAND GA[illegible] BIRDS

1613

Refuge National Bison Range Months of September to December, 1962

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Richardson blue grouse	2,000 a. conifer								75	
Ruffed grouse	300 a. stream bottom								5	
Columbian sharp-tailed grouse	12,000 a. mixed								15	No observations this period
Ring-necked pheasant	2,000 a. grass & stream bottom								200	
Chukar partridge	6,000 a. mixed								40	Further brood observations after Sept. 1 indicate minimum of six broods, avg. 8.7 young
Grey partridge	12,000 a. mixed								1000	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NK-3
(June 1945)

BIG (E

Refuge National Bison Range Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	M:F
Bison	15,600 a. grassland	101			79	5*		3	4			430	339	100:81
Elk	5,000 a. conifer & grass	15			15							68	53	100:81
Mule deer	10,000 a. conif., brush, grs	89			80		4	1	4			306	217	100:109
White-tailed deer	4,000 a. Conif, brush, grs	84			46		1	2	8	4	Gifts	246	189	100:105
Bighorn shp.	8,000 a. conifer & grass	10				1						43	42	Unknown
Antelope	6,000 a. grassland	41				3	3	2	6			128	114	100:93
Mt. goat	2,000 a. conifer	2										11	11	Unknown
Texas long-horn steer	5 a. pasture								2			4	2	-

Remarks: * 1 bull, 1 cow, & 3 calves disposed of due to injuries - meat salvaged & donated to school hot-lunch program through Confederated Salish and Kootenai Tribes.

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116000

3-175
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge National Bison Range Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Population
								Share Trapping					
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Coyote	15,000 A all habitat													10
Bobcat	" "													5
Striped Skunk	2,500 A Stream bottom													45
Badger	10,000 A Grassland													35
Beaver	100 A Stream bottom													5
Mink	" " "													10
Muskrat	50 A wetland													30
Yellowtailly Marmot	2000 A mixed habitat													100
Porcupine	4000 A " "				6									40
Raccoon	100 A Stream bottom													10
Columbian Ground Squirrel	5000 A Grassland													200

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Harber

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge ~~National Bison Range~~ Year 19 ~~69~~

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Timothy	200#	R	Sept	Surplus	0	200#							
Alta fescue						15#							
West wheat						25#	Exhib. Past.	2#/a	4 acres		July	Unknown	
Kent blue						15#							

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: _____

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge National Bison Range County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
None									
								Fallow Ag. Land	None

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 2 Refuge personnel

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Mixed grass	27.13	40	none	1. Cattle				
				2. Other Horses	2	24	none	160
				1. Total Refuge Acreage Under Cultivation				40*
Hay - Wild				2. Acreage Cultivated as Service Operation				40

*Periodic cultivation for grass hay and irrigated pasture

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C.91767

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge National Bison Range Months of January through December, 1959

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	260	215	475			310	310	165		165	
Barley	367	1,090	1,457			630	630	827		827	

(8) Indicate shipping or collection points

(9) Grain is stored at Headquarters granary

(10) Remarks Oats received from Commodity Stores, Big Sandy Mont. Barley from Kootenai N.W.R.

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., [illegible]H., D.C. 59323

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: National Bison Range

Proposal Number:

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/3-7/16	Canada Thistle	Roadside & picnic area	51	2,4-D Amine	25.5 gal	1# Acid Equiv.	Water 1:100	Ground
7/7 -9	St. John'swort	Upper & Lower West	882	2,4-D Amine	441 gal	1# Acid Equiv	Water 1:3	Aerial

10. Summary of results (continue on reverse side, if necessary)

Canada Thistle - excellent apparent kill, extent of long range control is questionable

St. John'swort - apparent kill 80 -90%

INTERIOR--PORTLAND, OREGON

REPORT ON THE PRELIMINARY RESULTS OF A STUDY OF THE SOCIAL BEHAVIOR OF THE PRONGHORN ANTELOPE

by

David W. Kitchen and Dale R. McCullough

Department of Wildlife and Fisheries
School of Natural Resources
University of Michigan, Ann Arbor
November 15, 1969

INTRODUCTION.

This interim report covers the period from May 7 to October 5, 1969 during which work was conducted on the National Bison Range, Montana. The purpose of the study is to describe and analyze the social behavior of the pronghorn antelope, and its relationship to other animals on the range. The field work was supported by grants from the Wildlife Management Institute, Washington, D.C., and the Welder Wildlife Foundation, Sinton Texas.

INTRASPECIFIC BEHAVIOR.

Four hundred and twenty hours of actual behavior observations were accumulated. So far, 92 behavioral acts have been described, but their variations and temporal patterns have not been fully analyzed. More observations are needed to adequately quantify certain acts, especially those between does and fawns early in the fawning season, as well as doe-buck and buck-buck acts during the breeding season.

Comparisons of certain pronghorn displays with those of other large ungulates show some interesting similarities. A good example is the pre-copulatory cheek patch display of the pronghorn buck. He approaches a doe with a high stepping prance, head held high and turned to the side, thus displaying his cheek patch, neck arched, mane partly erect, hairs around the medial rump gland erect, and occasionally with his rump patch erect as well. This pre-copulatory display is similar to the "prancing" display of the Uganda Kob(Buechner and Schloeth, 1965) and the promenade displays of Thomson's and Grant's gazelles (Estes, 1967). Bigalke (1963) has noted that the pronghorn is the closest ecological counterpart of the springbok and that they show not only similarity in behavior and habitat preference, but convergence in morphology such as an enlarged rump patch. Since the genetic relationships of these true antelopes to the pronghorn are very remote, similarities in displays are probably due

to similarities in environment and habitat and not to common ancestry. Further observations of pronghorns are necessary to build a body of data similar to that available for the true antelopes so that comparative studies could be attempted. This should help clarify the role of habitat in the selection for certain types of animal displays.

At first glance the prominent white markings on the pronghorn's head, neck, and body appeared to be quite uniform. It became evident, however, that these markings were highly variable and may allow individual recognition of the entire population. Potentially this may be quite valuable, if the marks do not change with seasonal molts, as it would make it possible to follow the activities of the individual bucks and does for the entire study. Thus, the breeding success of individual bucks could be documented over a two year period. This type of information will help in clarifying the role of territoriality in the pronghorn's breeding system.

Pronghorns have been described as being both territorial and harem breeders. Harem breeding has been reported in Texas by Buechner (1947), in Wyoming by Gregg (1955), and in Oregon by Einarsen (1948). Cole (1956) first described territoriality in central Montana and subsequently Bromley (1969) has reported territoriality at the National Bison Range in western Montana. These reports come from very different habitats and may represent inter-population variations in pronghorn breeding behavior.

The nature of the territory seems to be quite variable and pronghorns may be territorial throughout the year or may desert the territory to attend and breed an estrus does (Cole and Wilkins, 1958). My field observations for the 1969 rut indicate that elements of three types of breeding behavior may occur in rutting pronghorn bucks. Early in the breeding season (late August to about September 10) the bucks showed elements of both territorial and harem breeding behavior. During the actual breeding period, i.e. when copulations were occurring, (about September 17 to October 7) the interest of the master bucks seemed to

shift primarily to the does. Does were actively herded and defended. Also the territorial area defended by a master buck was reduced to the immediate vicinity of the doe group. When bachelor males were numerous and aggressive a master buck would usually defend only the estrus doe and may have formed a temporary tending-bond with her. On three occasions master bucks "tended" estrus does even though they lost their harems as a result. Further observations are needed to clarify the circumstances which result in a territorial, harem, or tending bond response by the master buck.

Dasmann and Mossman (1962) reported territoriality in Southern Rhodesian impala, while Schenkel (1966) found that in southern Kenya they breed in harems. This variation in behavior has been related to differences in environmental factors, such as weather and feeding conditions (Leuthold, 1966). Thomson's gazelles show both territorialtiy and harem behavior in the same population (Brooks, 1961). As already noted, pronghorns show a wide variety of breeding behavior and may have both between and within population variabilty. The situation at the National Bison Range, with a high variation in breeding behavior, may provide an opportunity to clarify the environmental and behavioral components that affect selection for territorial and harem breeding systems.

Buechner (1963) has noted that habitat stability is a requirement for the territorial breeding system in the Uganda Kob. The study of two pronghorn populations under different environmental conditions, as planned in this study, may clarify the concept of habitat stability fostering territoriality. Also it may be possible to find out what elements of the habitat are essential to territoriality in the pronghorn and other species as well.

The nature of territories in large herbivores is quite diverse. Uganda kob breed and defend territories throughout the year (Leuthold, 1966), and kob females are responsible for mate selection. Topi (Vesey-Fitzgerald, 1955), lechwe, and puku (De Vos and Dowsett, 1966), Thomson's and Grant's gazelles (Walther, 1964 and Estes, 1967) display seasonal territoriality and defend both the ground and the female.

Waterbuck (Kiley-Worthington, 1965) and vicuña (Koford, 1957) are territorial throughout the year and defend only the ground area, but have a seasonal breeding season. A set of data on the pronghorn territory similar to those available for the above species would be of great value for comparative studies of territoriality in large herbivores.

Female pronghorns play an important role in the breeding system. Master bucks attempt to control females during the rut, but they are usually unsuccessful and does move from one harem to another frequently. These movements caused a number of conflicts between rival bucks and may have played a role in reinforcing the hierarchy that was noted in bachelor males. Only a few naturally marked does could be recognized readily and so the movements of individual does were not well documented. Six doe fawns were ear-tagged in 1969, and these, added to those already recognized, should clarify the role of the doe in the herd.

Males in bachelor herds established a rather rigid dominance hierarchy during the summer. Yearling bucks were all at the lower end of the hierarchy and larger bucks at the top. On no occasion did a yearling dominate an older male, but during the rut yearlings sparred with larger males that were low in the hierarchy. Bachelor bucks wandered a great deal during the rut and on occasion bred estrus does unguarded by master bucks. The highest member in the bachelor hierarchy present at the time bred these unguarded does and bachelors accounted for 21% of the 17 observed copulations.

Master bucks accounted for 79% of the known copulations. No master bucks were replaced by or lost control of their does to secondary males. Although these bucks spent much time chasing subordinate bucks and herding does (high energy activities), they were able to feed frequently. Master bucks appeared to lose some weight, but none became exhausted as do master bulls in elk (McCullough, 1969).

Two factors may be important in the lack of turnover observed in pronghorn bucks. First, pronghorns rut for six weeks and most of the breeding is concentrated into about two weeks in late September.

McCullough (1969) reported a rut of about 12 weeks in elk, twice as long as the antelope, and breeding occurred during the entire period with most copulations occurring in the first few weeks. The shorter breeding season in pronghorns would certainly lower the probability of a buck being replaced. Secondly, pronghorn bucks on the Bison Range controlled smaller harems (1 to 16 does) than elk (15 to 60 cows) (McCullough, 1969), and so would have to spend less energy to control the females. These two factors together probably explain the ability of pronghorn master bucks to last the entire rut.

It was not possible to follow the full horn sheath cycle in the pronghorn and so no data dealing with the hypotheses of Geist (1966) and Goss (1964) concerning the evolution of horns and antlers were obtained. The prominent facial and upper neck markings of the pronghorn appear to play a more important role in individual recognition and pre-copulatory behavior than they do in threat displays. Pronghorns have a lateral threat display, and this orientation is consistent with the predicted orientation according to Geist's (1966) hypothesis concerning the relation between fighting behavior and threat displays.

INTERSPECIFIC BEHAVIOR.

In part, the geographical separation of the pronghorn, bison, elk, bighorn sheep, white-tailed deer, and mule deer has been clarified. Bison and pronghorns on the Bison Range frequented the same areas when the bison were held in the pastures used by pronghorns. While there appears to be little separation in habitat use there is a fair amount of behavioral antagonism between them. When a herd of bison feeds into an area being used by pronghorns, the antelope immediately leave the vicinity. Antelope are very nervous around bison and in one case a bison cow chased a pronghorn doe.

Mule deer were found in very different types of habitat than the pronghorn. Mule deer were concentrated in the Douglas-fir and spruce woodlands of the upper slopes while pronghorns used the open grasslands. On occasions mule deer were found in the areas bordering the grasslands

and did come into contact with antelope. No behavioral exchanges were noted between these two species.

White-tailed deer and pronghorns came into frequent contact in all areas used by antelope. This was especially true along the river bottom bordering certain grassland areas. Both species fed in the same areas frequently, but the deer spent the day from about 10:00 a.m. until about 5:00 p.m. in the river bottom, while the pronghorns remained in the grasslands all day. There is a high level of behavioral antagonism between white-tails and pronghorns and both often react aggressively when approached by the opposite species. In areas of overlap, behavioral mechanisms certainly aid in separating these species.

Bull elk frequented areas used by pronghorn herds in the summer, but cows were rarely evident at this time. Contact was rare, and pronghorns seemed to avoid elk when they were in the same area. Overlap occurred only in the early morning and at night, for during the day bulls stayed in the river bottom or the timbered uplands. Cows were seen only rarely and tended to use the higher grasslands and woodlands where only transient antelope bucks were seen.

Bighorn sheep were never observed in any areas that pronghorns used. Only one wandering pronghorn buck was seen in an area used by sheep. It would seem that ecological separation is based primarily on habitat selection, and behavioral or food habit considerations may be unimportant in this case.

So far the study has indicated that both habitat selection and antagonistic behavior play a role in the separation of some of these species. Difficulty in obtaining food habits data has been encountered and so the full degree and nature of their ecological separation is unclear at this time.

PROPOSED FURTHER RESEARCH:

Observation of free-roaming antelope will be continued, and documentation of acts will proceed as planned through photography with a 35 mm. camera. Tape recordings will be attempted and later analyzed with sonograms, especially in the case of the bucks' laugh call. Fawns will be ear-tagged again, but it is hoped that adults can be recognized by natural markings. A weekly spot light census will be continued through another year, and all animals observed will be recorded as to species and plotted according to location and habitat.

If the grazing rotation of the bison will permit, "forage-unit" studies of availability and utilization will be attempted in the areas which appeared to be "territories." These studies will also be used to clarify the interspecific relationships of the various species at the Bison Range. Fecal, observational, and rumen analysis will be carried out, as possible, to establish the food habits of the various species.

Literature Cited

Bigalke, R.G. 1963. The springbok Antidorcas marsupialis. Interstate Antelope Conf. Trans. 1963:68-80.

Bromley, Peter. 1969. Territoriality in pronghorn bucks on the National Bison Range. J. of Mammalogy 50(1):81-89.

Brooks, A.C. 1961. A study of the Thomson's gazelle (Gazella thomsonii Günther) in Tanganyika. Col. Res. Publ. No. 25 London.

Buechner, H.K. 1947. Range use of the pronghorned antelope in western Texas. N.A. Wildl. Conf. Trans. 12:185-192.

-------, 1963. Territoriality as a behavioral adaptation to environment in the Uganda kob. Proc. XVI Intern. Congr. Zoology 3:59-63.

-------, and Schloeth, Robert. 1965. Ceremonial mating behavior in Uganda kob (Adenota kob thomasi Neumann). Z. f. Tierpsychology 22(2):209-225.

Cole, F.G. 1956. The pronghorn antelope, its range use and food habits in central Montana with special reference to alfalfa. Montana State College Agric. Exp. Station, Bozeman. Tech. Bull. 516. 62 pp.

------- and B.T. Wilkins 1958. The pronghorn antelope, its range use and food habits in central Montana with special reference to wheat. Montana Fish and Game Dept., Tech. Bull. No. 2. 39pp.

Dasmann, R.F. and A.S. Mossman 1962. Populations studies of impala in Southern Rhodesia. J. Mammalogy 43(3):375-395.

De Vos, A. and R.J. Dowsett 1966. The behavior and population structure of three species of the genus Kobus. Mammalia 30(1):189-209.

Einarsen, A.S. 1948. The pronghorn antelope and its management. Wildl. Mgmt. Institutue, Wash., D.C. 235 pp.

Estes, R.D. 1967. The comparative behavior of Grant's and Thomson's gazelles. J. Mammalogy 48(2):189-209.

Geist, V. 1966. The evolution of horn-like organs. Behaviour 27(3):175-214.

Goss, R.J. 1964. The role of skin in antler regeneration. Pp. 194-207: in Advances in biology of skin. Vol. 5. Pergamon Press, Oxford.

Gregg, H.A. 1955. Summer habits of Wyoming antelope. Ph. D. thesis, Cornell Univ., Ithica. 185 pp.

Kiley-Worthington, M. 1965. The waterbuck (Kobus defassa Ruppel 1835 and K. ellipsiprimus Ogilby 1833) in East Africa: Spatial distribution. A study of sexual behavior. Mammalia 29(2):177-204.

Koford, C.B. 1957. The vicuña and puna. Ecol. Mono. 27(2):153-219.

Leuthold, W. 1966. Variation in territorial behaviour of Uganda kob Adenota kob thomasi (Neumann 1896). Behaviour, 27(3):214-257.

McCullough, D.R. 1969. The tule elk: its history, behavior, and ecology. Univ. of Calif. publ. in Zoology, 88, Univ. of Calif. Press, Berkeley, 209 pp.

Schenkel, R. 1966. On sociology and behavior in impala (Aepyceros melampus suara Matschie). Z.f. Säugetierkunde 31(3):177-205.

Vesey-Fitzgerald, D.F. 1955. The topi herd. Oryx 3(1):4-8.

Walther, F. 1964. Einige verhaltensbeobachtungen an thomson-gazellen (Gazella thomsonii Günther) im Ngorongoro-Krater. Z.f. Tierpsychology 21(3):871-890.

A Summary Outline:
1969 Archaeological Study of the
National Bison Range, Moiese, Montana

During the summer of 1969, Cecil D. Barnier, an anthropology major at the University of Montana, was hired under the Federal Work Study Program to conduct a preliminary archaeological survey of the National Bison Range. Mr. Barnier was under direction of the University of Montana Statewide Archaeological Survey.

The purpose of the project was to locate and record all archaeological sites within the boundaries of the refuge. Recommendations were also to be made concerning the protection and preservation or salvage of those sites located. A brief summary of the study follows.

The National Bison Range lies in the Flathead Valley near the heart of the vast western Montana region that was controlled during prehistoric times by Salishan and Kootenai speaking peoples. Although little is known of the archaeology in the area, there is some evidence to suggest occupation over a considerable length of time. Small leaf-shaped projectile points are suggestive of Plains artifact types dating from 2,000 to 4,000 B.C., widely dispersed in the Flathead VAlley. One "Cascade type" blade or projectile point and the center section of a parallel oblique flaked blade have been found at MacDonald Lake some 10 air miles from the refuge. Elsewhere in Montana and Wyoming,

these two artifact types have been radiocarbon dated at 5,000 to 7,000 B.C. The age of those sites found on the Bison Range, however, fall much later in time.

Of the seven sites found on the refuge, three are possible eagle catching pits and two were occupation sites (campsites). Two placer mining sites were also located.

The small number of occupation sites found is probably due to two factors. First, camas, the root of which was a staple food of the Salish and Kootenai Indians, is not present in this section of the Flathead Valley. The lack of camas probably resulting in much lighter use of the area correlates with the type of sites found on the Bison Range. Here the scarcity of cultural debris and small scale of the sites suggest overnight stops by hunting or traveling parties, rather than longer stays such as were required for the collecting and preparation of the camas root. The second reason for the scarcity of located habitation sites is the extremely lush grass cover of the refuge. Since the method of survey employed was strictly surface reconnaissance, it is difficult to say that all sites were located because forage and grass cover have the ground well protected and hidden.

Among the more interesting sites are the several "pits" about 4 ft. in diameter and 3 1/2 ft. deep, located in talus slopes near the top of Red Sleep Mountain. This

mountain is the highest point of elevation on the refuge. Although more research must be done before any conclusive statement can be made, it is supposed that these sites were used by the Indians to catch eagles. In catching eagles, an Indian would place meat on the lip of the pit, crouch within it, and cover himself with grass or shrubbery. An eagle alighting to get the bait was grabbed, dragged into the pit and killed.

Moving now into the realm of historic archaeology, two apparent placer mining deposits were found on the Bison Range -- one at the mouth of Triskey Creek and at the mouth of Elk Creek. Again, more research needs to be done, but cursory evidence suggests that the deposits are remains of gold mine operations sometime close to the turn of the century. The disturbed area is small compared to some placer operations, but is large enough to suggest that some amount of wealth has been removed from the area.

A far more complete report is presently being prepared for publication. This final report will be submitted to the Bison Ranger Manager for approval before being published in a nationally destributed anthropological journal.

The administrative personnel of the National Bison Range have taken a pioneering step as far as Montana is concerned. Other than Yellowstone National Park, no other park or refuge in the state has seen fit to instigate a program for the protection and preservation of

archaeological sites within its boundaries. It can only be hoped that others will follow the example set by Moiese.

NINEPIPE & PABLO

NINEPIPE AND PABLO NATIONAL WILDLIFE REFUGES

Narrative Report

January 1, 1969 to December 31, 1969

REFUGE PERSONNEL

These refuges are managed from the National Bison Range office.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
FISH AND WILDLIFE SERVICE
Moiese, Montana

CONTENTS

NINEPIPE AND PABLO NATIONAL WILDLIFE REFUGES

Narrative Report

January 1, 1969 to December 31, 1969

I. GENERAL

A. Weather Conditions

Severe winter weather had both reservoirs completely frozen until late March. Spring weather was generally cool and wet and the summer and fall were dry.

Low fall water levels led to early freeze up on both reservoirs.

B. Habitat Conditions

1. Water

a. Ninepipe

The year started with the reservoir at 3008.9 feet which is 8.2 feet above the seven year mean elevation for January. Ninepipe was ice-free by April 10. Levels continued above normal until September when the elevation had dropped to 2996.1 feet (353 surface acres). The usual fall increase in water level did not materialize due to dry conditions and complete drainage of the upper storage reservoirs.

With the very low fall water level, it is almost certain that goose nesting will be affected next spring either by flooding of ill-placed nests or by discouraging some nesters entirely. There is no possibility the reservoir will be filled before April and most geese will have established territories prior to that time. Ducks are expected to be affected to a lesser degree, but low water conditions during migration may discourage potential nesting pairs from stopping on the refuge.

Ninepipe Pool Elevations - 1969

Month	7 year mean	CY 1969	Deviation
Jan.	3000.7	3008.9	plus 8.2
Feb.	3000.9	3008.9	" 8.0
Mar.	3002.2	3009.8	" 7.6
Apr.	3004.7	3009.9	" 5.2
May	3006.3	3009.9	" 3.6
June	3008.1	3011.0	" 2.9
July	3004.9	3007.5	" 2.6
Aug.	2996.8	3000.2	" 3.4
Sept.	2997.4	2996.1	minus 1.3
Oct.	3001.1	2996.2	" 4.9
Nov.	3001.4	2996.1	" 5.3
Dec.	3001.8	2996.1	" 5.7

b. Pablo

Pablo reservoir was 14.4 feet above normal at 3206.5 feet in January, and continued above normal elevation until August. By September the reservoir had been drained completely to facilitate work on the outlet structure. Because of repairs to the structure, the reservoir remained empty through December. The effect on waterfowl nesting is expected to be the same as at Ninepipe, although to a lesser degree because of less desirable habitat and a history of fewer nesting birds.

Pablo Pool Elevations - 1969

Month	9 year mean	CY 1969	Deviation
Jan.	3192.1	3206.5	plus 14.4
Feb.	3192.3	3206.3	" 14.0
Mar.	3192.4	3205.7	" 13.3
Apr.	3198.9	3208.3	" 9.4
May	3204.1	3207.5	" 3.4
June	3207.0	3209.3	: 2.3
July	3203.7	3205.5	" 1.8
Aug.	3193.9	3187.4	minus 6.5
Sept.	3188.2	3179.0 (dry)	" 9.2
Oct.	3190.9	3179.0	" 11.9
Nov.	3191.3	3179.0	" 12.3
Dec.	3191.5	3179.0	" 12.5

2. Food and Cover

a. Ninepipe

Spring cover conditions were excellent and, combined with unusually high stable water levels, should have been exceptionally attractive to nesting waterfowl. Goose nesting was good, but the number of duck pairs using the refuge was unexplainably low for the quality of the habitat.

Aquatic plant production was very good this year due to the high water level through the spring and early summer.

Upland grass cover suffered this summer, particularly in Unit 2, from heavy cattle use. This was due to high water concentrating the animals in a narrow band of upland between the boundary and shoreline. It was apparent the number of A.U.M.'s allowed at Ninepipe had been based on much too large an acreage. (See Section IV).

Low water levels in late summer and fall produced many acres of goose browse on exposed mud flats, and tended to hold birds on the refuge through much of the hunting season.

b. Pablo

Upland cover conditions at Pablo were good throughout the year. Several old tree plantations along the north shore were fenced to provide protection from grazing. These areas should provide excellent nesting and winter cover for upland birds.

Drainage of the reservoir provided ample goose browse on exposed mud flats, but discouraged duck use almost entirely.

Geese tended to remain on the dry lake bed most of the fall with only occasional off-refuge flights.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

a. Ninepipe

Whistling swans made little use of the refuge this year, although several hundred birds were noted in the Charlo-Ronan area in April.

Canada geese arrived the week of March 23-29 and increased to 138 birds by the end of May. At least 18 broods, totaling 110 young, were produced this spring. Most birds chose to nest on existing earthen islands, although a few pairs made use of tree platforms and straw bales placed on some of the lower islands that were threatened by rising water.

Geese peaked at 815 in early November. As mentioned earlier, low water levels and resulting browse production on the mud flats were ideal for the geese this fall. Birds grazed tantalizingly before hunters as they hunkered along the boundary fences.

Snow geese arrived April 6 and remained but a few days. Two Ross' geese were noted with a small group of Snows during the following week. The white geese did not use the refuge during the fall migration.

Mallards were present all winter, but did not appear on the refuge until the first open water was available the week of March 16-22. Spring duck peak was a meager 5,085 birds, a majority of which were Pintails, Scaup and Redheads.

A breeding pair count was conducted May 27. The entire shoreline was covered on horseback and habitat conditions appeared excellent; however only 174 pairs were tallied. (See table below.)

Ninepipe Breeding Pair Count - 1969

Species	Pairs	Lone Males	Lone Females
Mallard	11	16	12
Gadwall	5		
Widgeon	2	5	

Species	Pairs	Lone Males	Lone Females
Pintail	1		
B.W. teal	6	13	
Cinnamon teal	3	13	
Shoveler	5	10	
Wood duck			1
Redhead	32	25	
Ringneck	1		
Canvasback		2	
Scaup	3	3	
Ruddy	12	6	1
TOTALS:	81	93	14

Total breeding pairs - 174

A total of 49 broods were counted during the summer months and production was estimated at 576 ducks.

The fall duck flight was disappointingly small this year. A peak of 15,000 birds came in mid-December. Numbers remained nearly static from October through late December, possibly due to low water conditions. No major migration was noted any time this fall.

b. Pablo

As at Ninepipe, Whistling swans made little use of the refuge, with one small group of birds observed both spring and fall for a period of about one week.

One pair of Canada geese was noted the first week in April. This pair was observed for approximately three weeks and then was not seen again until late June. At that time 80 birds, including three broods, appeared on the reservoir. In early August the flock had increased to 145 and by the first of September there were 625 geese using the refuge. Numbers continued to increase until mid-October, when a peak of 1370 birds was reached. Numbers fluctuated only slightly until late November and then dropped sharply until all birds had left by mid-December.

Mallards were first observed on the refuge the first week in April and the spring duck peak of 385 birds was reached two weeks later. Numbers remained low through the summer. Only four broods were actually seen, and duck production was estimated at 228.

A small influx of Mallards and Pintails the last week in August produced a fall peak of 6965 birds. Drainage of the reservoir in September left little attractive habitat for ducks and numbers dwindled through the fall.

2. Marsh and Water Birds

Large numbers of Red-necked and Western grebes nested at Ninepipe with lesser numbers present at Pablo. Low water provided extensive

shorebird habitat on both refuges during the fall migration period and most of the common species were observed. Coot production was estimated at 630 for Ninepipe and 42 for Pablo.

B. Upland Game Birds

Ring-necked pheasants suffered some losses during the severe winter weather, principaly from road-kills, when birds were forced to the highways by deep snows. Production appeared good on both refuges, and numbers were augmented by releases of game farm birds prior to the hunting season. Numbers at the end of the year were about the same as in past years with 175 at Ninepipe and 200 at Pablo.

Gray partridge were not observed on either refuge this year, although they were seen near both areas.

C. Big Game Animals

None observed.

D. Fur Animals, Predators, Rodents and Other Mammals

Striped skunks were relatively abundant this year, judging from the number of road kills in the Ninepipe area.

Mouse populations were generally high on both refuges.

Muskrats were numerous through the high-water portion of the year, but none were seen after the reservoirs reached their low points in September.

E. Hawks, Eagles, Owls, Ravens and Magpies

Past observations that raptor use on these refuges is declining seem to apply this year as well.

Eagles did not winter on either refuge this year, due to the absence of waterfowl. The first Bald eagle was noted March 21 and the spring peak was only two birds. Fall use by these birds was also low. The first Bald eagles of the fall were observed November 19 and included one adult and three immature birds. Golden Eagles were not seen on either refuge until the fall period. A maximum of five were observed at Ninepipe and no more than two were ever noted at Pablo.

Few hawks or other birds in this category were recorded on either refuge. There was a small amount of Crow production at Ninepipeand a moderate number of nesting Magpies on both refuges.

F. Other birds

New seasonal occurrence records for the Audubon's Warbler and the Yellowthroat were established at both refuges when they were observed September 5 and 8.

G. Fish

Bass fishing was only fair at Ninepipe this summer. The fish would just be getting into the shallows when a rain would cool the water and send them deep again. Heavy aquatic growth made angling difficult, but a few in the three to five pound class were taken.

Rainbow trout fishing was good at Pablo much of the summer and fish were running large. The Bureau's Division of Fishery Services stocked 30,000 three inch Rainbows in Pablo and the State introduced 6,105 small Rainbows (6.3 fish per pound).

Of course, drainage of Pablo reservoir caused the usual loss of fish and the usual public concern. The refuge worked with Fisheries Services and the Flathead tribe in salvaging and transplanting as many fish as possible.

H. Reptiles

Nothing to report.

I. Disease

One sick Great blue heron was picked up at Ninepipe and sent to Bear River for disease analysis. They were unable to determine the cause of death.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Ninepipe

The three quarter mile perimeter fence around Ninepipe headquarters was completely rebuilt. New construction consisted of a four wire stock type fence using "T" type steel posts.

2. Pablo

Two cattle guards were replaced at the Pablo refuge. These are located at the south and middle entrance roads.

The south, east and north sides of the Pablo boundary fence were re-posted. This was accomplished along with routine fence checks.

A total of 85 rods of fence was constructed on the north side of Pablo to separate several tree plantations from the grazing units.

The small picnic area at Ninepipe was maintained as required. This included hauling wood, garbage and mowing the grass.

B. Plantings

None.

C. Collections and Receipts

None.

D. Control of Vegetation

1. Biological Control

None.

2. Chemical Control

a. Ninepipe

A total of 12 acres of Canada thistle was sprayed with 2,4-D amine at two pounds acid equivalent, per acre. The treated area consisted of the main dike and the headquarters area. Initial results appeared quite good with resulting kills ranging from 80% to 95%.

E. Planned Burning

None.

F. Fires

None.

IV. RESOURCE MANAGEMENT

A. Grazing

1. Ninepipe

There was evidence of over use on the Ninepipe grazing allotment, particularly in Unit 2, along the northeast shore. The refuge called in B.I.A. and S.C.S. range personnel and conducted a re-survey of all grazing units this fall. Grasses present are no longer native, but more like tame pasture and the S.C.S. suggested a rate of .3 A.U.M.'s per acre. The problem evolved from the use of an acreage figure which was much larger than the actual upland acreage present. New acreages were computed, from recent aerial photos, for each grazing unit and A.U.M.'s were adjusted accordingly. B.I.A. issued the 1970 permit for 90 A.U.M.'s in accordance with the survey findings.

Ninepipe Grazing Allotment

Unit	Location	Acres	A.U.M.'s
1	West of main dike	91.5	30.5
2	North shore	55.5	18.5
3	East of Hiway 93	23.7	7.9
4	South Shore	99.6	33.2
TOTALS:		270.3	90.1

Although close grazing does produce a certain amount of goose browse, it was felt that additional nesting cover was more urgently needed.

2. Pablo

The permittee at Pablo grazed 85 head of cattle from May 17 to September 14. No grazing problems were evident at this refuge and upland cover going into the winter was good.

B. Haying

None.

C. Fur Harvest

There was little trapping activity on the reservation during the winter of 1968-69 and no concrete figures are available on the catch.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Reports

1. Wildlife Inventory

Census on both refuges were done in accordance with the approved Wildlife Inventory Plan.

2. Waterfowl Banding

Banding details were covered in the Bison Range report.

VI. PUBLIC RELATIONS

A. Recreational Uses

Visitor use for Ninepipe and Pablo was estimated at 6700 actual visits this year with fishing the most popular activity at both refuges.

B. Refuge Visitors

Included in Bison Range report.

C. Refuge Participation

Included in Bison Range report.

D. Hunting

Goose hunting on the State Waterfowl Management Area and near Pablo was generally good opening week-end but slow through the remainder of the season. The State closed the goose season in this

portion of Western Montana on December 10, when the known kill exceeded 400. This is an annual measure taken to prevent an over-harvest of local birds.

Duck hunting was very poor around Pablo and, at times, quite good on State lands surrounding Ninepipe. Weather was generally too nice for good hunting.

Pheasant hunting was considered fair to good.

E. Violations

Manager Kaschke apprehended Richard A. Dill, Dayton, Ohio and Richard L. Dill, Stevensville, Montana for fishing during the closed season at Ninepipe. The cases were turned over to State Warden Lambeth. Both men forfeited bonds of $27.50.

F. SAFETY

Included in Bison Range report.

VII. OTHER ITEMS

A. Items of Interest

The Ninepipe headquarters complex was taken over by the Division of Wildlife Services in July. Frank Wetherbee, District Supervisor for western Montana, moved his family into the house and operates his office and warehouse in the service building.

B. Report Credits

Section III, Foreman May.
All other sections, Assistant Barber
Typing, Clerk Scammon

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Kinecipe NWR MONTHS OF January TO April, 1969

(1) Species	(2) Weeks of reporting period									
	12/29-1/4 : 1	1/5-1/11 : 2	1/12-1/18 : 3	1/19-1/25 : 4	1/26-2/1 : 5	2/2-2/8 : 6	2/9-2/15 : 7	2/16-2/22 : 8	2/23-3/1 : 9	3/2-3/8 : 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

All water area frozen

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Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Minnipe NWR MONTHS OF January TO April, 19 69

(1) Species	(2) Weeks of reporting period: 3/9-15 (11)	3/16-22 (12)	3/23-29 (13)	3/30-4/5 (14)	4/6-12 (15)	4/13-19 (16)	4/20-26 (17)	4/27-5/3 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling						10			70		
Trumpeter											
Geese:											
Canada			12	12	52	64	64	64	1,876		
Cackling											
Brant											
White-fronted											
Snow					230	13			1,701		
Blue Goose						2			14		
Other											
Total Geese			12	12	282	79	64	64	3,591		
Ducks:											
Mallard		110	35	110	380	300	100	50	7,595		
Black											
Gadwall					60	90	40	15	1,435		
Baldpate			10	40	1,550	815	250	25	16,830		
Pintail			90	75	180	120	50	20	3,745		
Green-winged teal					140	205	125	10	3,360		
Blue-winged teal								15	105		
Cinnamon teal								15	105		
Shoveler				10	255	130	80	20	3,465		
Wood											
Redhead				15	705	220	150	80	8,190		
Ring-necked					20	10	10	10	350		
Canvasback				30	250	150	50	15	3,465		
Scaup				25	1,380	355	200	80	14,280		
Goldeneye				50	105	50	30	15	1,750		
Bufflehead					20	15	10	5	350		
Ruddy						275	150	25	3,150		
Other Merganser					40	10			350		
Total Ducks		110	135	355	5,085	2,745	1,245	400	70,525		
Coot:				100	2,875	4,770	1,245	335	65,275		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	70	10	
Geese	3,591	282	
Ducks	70,525	5,085	
Coots	65,275	4,770	

SUMMARY

Principal feeding areas State-owned agricultural lands immediately adjacent to the reservoir.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-175(
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Minepipe MONTHS OF May TO August, 1969

(1) Species	(2) Weeks of reporting period: 5/4 - 10 (1)	5/11 - 17 (2)	5/18 - 24 (3)	5/25 - 31 (4)	6/1 - 7 (5)	6/8 - 14 (6)	6/15 - 21 (7)	6/22 - 28 (8)	6/29 - 7/5 (9)	7/6 - 12 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	64	64	133	138	138	138	138	138	138	120
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Total Geese	64	64	133	138	138	138	138	138	138	123
Ducks:										
Mallard	50	50	20	75	75	75	75	75	75	195
Black										
Gadwall	15	15	5	10	10	10	10	10	10	
Baldpate	25	25	5	10	10	10	10	10	10	80
Pintail	20	20	10	5	5	5	5	5	5	35
Green-winged teal	10	10	5							10
Blue-winged teal	15	15	15	25	25	25	25	25	25	100
Cinnamon teal	15	15	10	20	20	20	20	20	20	
Shoveler	25	25	5	20	20	20	20	20	20	45
Wood										10
Redhead	75	75	20	90	90	90	90	90	90	105
Ring-necked	10	10		5	5	5	5	5	5	5
Canvasback	15	15		10	10	10	10	10	10	10
Scaup	90	90	5	10	10	10	10	10	10	20
Goldeneye	15	15								
Bufflehead	5	5								
Ruddy	25	25	10	40	40	40	40	40	40	20
Other										
Total Ducks	410	410	110	320	320	320	320	320	320	635
Coot:	335	335	245	300	300	300	300	300	300	450

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Cont. FWR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pinepipe MONTHS OF May TO August, 1969

(1) Species	(2) Weeks of reporting period: 7/13 - 19 (11)	7/20-26 (12)	7/27-8/2 (13)	8/3 - 9 (14)	8/10-16 (15)	8/17 - 23 (16)	8/24-30 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	123	123	285	285	285	360	360		21,231	18	110
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Total Geese	123	123	285	285	285	360	360		21,231	18	110
Ducks:											
Mallard	195	195	400	400	400	1140	1350		33,915	15	90
Black											
Gadwall			10	10	10	10			945	2	18
Baldpate	80	80	15	15	15	60	30		3,430	1	24
Pintail	35	35	45	45	45	950	645		13,405	3	18
Green-winged teal	10	10							385	1	6
Blue-winged teal	100	100	145	145	145	250	170		9,450	9	54
Cinnamon teal									1,120		48
Shoveler	45	45	10	10	10	10	15		2,555	2	48
Wood	10	10	15	15	15	15	15		735	2	12
Redhead	105	105	265	265	265	180	95		14,665	12	174
Ring-necked	5	5							455		6
Canvasback	10	10	5	5	5				945		6
Scaup	20	20	10	10	10				2,345		18
Goldeneye									210		
Bufflehead									70		
Ruddy	20	20	85	85	85	20	20		4,585	2	54
Other											
Total Ducks	635	635	1005	1005	1005	2635	2340		89,215	49	576
Coot:	450	450	750	750	750	1500	2630		73,114		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	0
Geese	21,231	360	110
Ducks	89,215	2,635	576
Coots	73,115	2,630	630

SUMMARY

Principal feeding areas Aquatics in reservoir and surrounding grainfields

Principal nesting areas Islands and shoreline around south shore

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-175(
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Minepipe MONTHS OF September TO December, 1969

(1) Species	(2) Weeks of reporting period									
	8/31-9/6 : 1	9/7-13 : 2	9/14-20 : 3	9/21-27 : 4	9/28-10/4 : 5	10/5-11 : 6	10/12-18 : 7	10/19-25 : 8	10/26-11/1 : 9	11/2-8 : 10
Swans:									Aerial	
Whistling										
Trumpeter										
Geese:										
Canada	380	214	214	214	214	214	460	460	460	460
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other TOTAL GEESE	380	214	214	214	214	214	460	460	460	460
Ducks:										
Mallard	1,470	1,370	1,370	1,370	1,370	5,000	11,645	11,645	11,645	11,645
Black										
Gadwall	10	5	5	5	5	5				
Baldpate	40	40	40	40	40	400	685	685	685	685
Pintail	250	250	250	250	250	400	685	685	685	685
Green-winged teal							200	200	200	200
Blue-winged teal	95	145	145	145	145	145				
Cinnamon teal										
Shoveler	15	10	10	10	10	10	200	200	200	200
Wood		5	5	5	5	5				
Redhead	60	40	40	40	40	40	100	100	100	100
Ring-necked										
Canvasback	5						50	50	50	50
Scaup							100	100	100	100
Goldeneye							25	25	25	25
Bufflehead							25	25	25	25
Ruddy	30	10	10	10	10	10				
Other Merganser		5	5	5	5	5				
TOTAL DUCKS:	1,975	1,880	1,880	1,880	1,880	6,020	13,715	13,715	13,715	13,715
Coot:	3,100	1,200	1,200	1,200	1,200	1,200	1,200	1,200	800	800

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Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Ninepipe MONTHS OF September TO December, 19 9

(1) Species	(2) Weeks of reporting period: 11/19-15 (11)	11/16-22 (12)	11/23-29 (13)	11/30-12/6 (14)	12/7-13 (15)	12/14-20 (16)	12/21-27 (17)	12/28-1/3 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	815	815	210	210	210	175			40,875		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
TOTAL GEESE:	815	815	210	210	210	175			40,875		
Ducks:											
Mallard	10,210	10,210	10,000	10,000	10,000	14,180	10,200	20	921,810		
Black											
Gadwall											
Baldpate	945	945	400	400	400	250			43,740		
Pintail	370	370	400	400	400	250			46,060		
Green-winged teal	40	40	40	40	40	50			7,350		
Blue-winged teal									5,710		
Cinnamon teal											
Shoveler									6,055		
Wood									175		
Redhead									4,620		
Ring-necked											
Canvasback	15	15	15	15	15				1,960		
Scaup									2,800		
Goldeneye	55	55	60	60	60	200	200		5,530		
Bufflehead									560		
Ruddy											
Merganser	30	30	30	30	30	30			2,835		
TOTAL DUCKS:	11,800	11,800	11,015	11,015	11,015	15,000	10,200	20	1,065,690		
Coot:	150	150	50	50	50				94,250		

(over)

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ninepipe NWR Months of January to April 19 69

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	2	04/11	2	04/11	Still present					
Red-necked Grebe	1	04/11	10	04/26	"	"				
Eared Grebe	1	04/18	1	04/18	"	"				
Western Grebe	2	04/11	26	04/26	"	"				
Great Blue Heron	4	04/11	9	04/26	"	"				
II. Shorebirds, Gulls and Terns:										
Killdeer	2	04/04	250	04/26	Still Present					
Common Snipe	2	04/16	100	04/26	"	"				
California Gull	25	03/28	50	04/26	"	"				
Ring-billed Gull	25	03/28	150	04/26	"	"				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Bald Eagle	1	03/21	2	03/28	1	04/04		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Minnepipe Months of May to August 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous	Period	2	05/01	Still	Present				
Red-necked Grebe	Previous	Period	140	08/01	Still	Present			65	
Eared Grebe	Previous	Period	1	05/01	Still	Present				
Western Grebe	Previous	Period	220	08/01	Still	Present			120	
Pied-billed Grebe	2	05/05	120	08/01	Still	Present				
Great Blue Heron	Previous	Period	25	08/01	Still	Present				
Black-crowned Night Heron	1	05/05	1	05/05	1	05/05				
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	250	08/01	Still	Present			100	
Common Snipe	4	08/06	200	08/01	Still	Present			100	
Spotted Sandpiper	5	05/20	50	07/07	Still	Present			20	
Greater Yellowlegs	4	08/06	30	08/26	Still	Present				
Lesser Yellowlegs	2	08/01	10	08/26	Still	Present				
Avocet	2	06/15	6	08/26	Still	Present				
Wilson's Phalarope	300	05/20	300	08/01	Still	Present			100	
California Gull	Previous	Period	150	08/01	Still	Present			50	
Ring-billed Gull	Previous	Period	450	08/01	Still	Present			175	
Franklin's Gull	1	06/11	1	06/11	1	06/11				
Forster's Tern	4	05/20	200	07/07	Still	Present			150	
Black Tern	1	05/20	100	07/07	Still	Present				

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove									
White-winged dove	2	05/05	50	08/01	Still	Present			
IV. Predaceous Birds:									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow	2	05/20	30	07/07	11	11		10	
Red-tailed Hawk	1	06/20	2	08/	11	11			
Marsh Hawk	6	05/10	8	08/26	11	11			

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Minnipipe Months of September to December 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common loon	Previous	period	3	9/8	3	9/8				
Red-necked grebe	"	"	30	"	30	"				
Eared grebe	"	"	75	"	25	10/4				
Western grebe	"	"	50	"	10	"				
Pied-billed grebe	"	"	10	"	10	9/8				
Great blue heron	"	"	20	10/4	5	12/5				
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	period	100	9/8	2	12/5				
Common snipe	"	"	25	"	20	10/24				
Spotted sandpiper	"	"	10	"	10	9/8				
Greater yellowlegs	"	"	75	"	75	"				
Lesser yellowlegs	"	"	100	"	100	"				
Avocet	"	"	15	"	15	"				
Wilson's phalarope	"	"	100	"	100	"				
California gull	"	"	10	"	10	10/4				
Ring-billed gull	"	"	50	"	15	"				
Forster's tern	"	"	40	"	40	9/8				
Black tern	"	"	10	"	10	"				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous period		25	9/8	25	9/8		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	1	11/19	1	11/19	1	12/5		
Duck hawk								
Horned owl	1	9/8	1	9/8	1	9/8		
Magpie								
Raven								
Crow	Previous period		10	9/5	10	10/4		
Red-tailed hawk	"	"	1	9/8	1	9/8		
Marsh hawk	"	"	2	"	2	12/5		
Bald eagle	4	11/19	4	11/19	4	11/19		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge **Ninepipe** For 12-month period ending August 31, 1969

Reported by **Robert L. Barber** Title **Assistant Refuge Manager**

(1) Area or Unit Designation	(2) Habitat Type	(2) Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops		Ducks	2,439,745	354	576
	Upland	246	Geese	69,195	72	110
	Marsh	572	Swans	133	0	0
	Water	1,204	Coots	1,108,590	200	630
	Total	2,022	Total	3,617,663	626	1,316
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form -2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Pinepipe NWR Months of January to April, 1969

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Grasslands, 246 A								75	Numerous road-kills this winter due to deep snows forcing birds onto highways
Gray partridge	Grasslands, 246 A								10	Not seen this period

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form -2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Minidoka Months of May to August, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Grasslands, 246A			100					175	
Gray partridge	Grasslands, 246 A								10	Not seen this period

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form .-2
(April 1946)

UPLAND GA BIRDS

1613

Refuge **Kinèpipe** Months of **September** to **December**, 19**69**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	**246 a. grassland**								**175**	**Mont. F&G released game farm birds on State lands around the refuge**
Gray partridge	**246 a. grassland**								**10**	**Not observed**

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-175
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Ninepipe National Wildlife Refuge Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5)
								Share Trapping					
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popula-tion
Meadow Mouse	Grassland 246A													Moderate
Deer Mouse	" "													"
Striped Skunk	" "													Low
Muskrat	Marsh & Water 1,672A													50
Mink	" " "													Unknown
Badger	Grassland 246A													5*
Weasel	Marsh & Grassland 818A													Moderate
Beaver	Water, Marsh & upland 2,000A													Occasional
Columbia Ground Squirrel	Grassland 246A													Low
Pocket Gopher	" "													Low
Coyote	" "													2

* List removals by Predator Animal Hunter

REMARKS: * No observations but one den is inhabited.

Reported by _____

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ninepipe County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
								Fallow Ag. Land	

* All permits are issued and all receipts are received by the Bureau of Indian Affairs, Ronan, Montana

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	91	320	*	750
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C.91767

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Ninepipe Months of January through December, 195-

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Wheat	20		20			20	20	0			
Barley	1,130	540	1,670			770	770	900		900	

(8) Indicate shipping or collection points

(9) Grain is stored at Ninepipe headquarters granary

(10) Remarks Barley received from Lockeart N.W.R.

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., H., D.C. 59323

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: **Minepipe**

Proposal Number:

Reporting Year: **1969**

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7/15	**Canada Thistle**	**Dike & Horse Pasture**	**12**	**2,4 - D Amine**	**6 gal.**	**2# Acid Equiv**	**Water 1:100**	**Ground Hand Spray**

10. Summary of results (continue on reverse side, if necessary)

Excellent kill, extent of long-range control is questionable

INTERIOR--PORTLAND, OREGON

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo Unit MONTHS OF January TO April, 1969

(1) Species	(2) Weeks of reporting period: 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:										

All WATER AREAS FROZEN

3 -7[illegible]0a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo NWR MONTHS OF January TO April, 1969

(1) Species	(2) Weeks of reporting period: 3/09-15 (11)	3/16-22 (12)	3/23-29 (13)	3/30-4/5 (14)	4/6-12 (15)	4/13-19 (16)	4/20-26 (17)	4/27-5/3 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling						7			49		
Trumpeter											
Geese:											
Canada				2	2	2			42		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
~~Other~~ Total Geese				2	2	2			42		
Ducks:											
Mallard				75	75	75	50	30	2,135		
Black											
Gadwall						5	5	5	105		
Baldpate					100	100	25	5	1,610		
Pintail						40	25	5	455		
Green-winged teal						105	50		1,085		
Blue-winged teal								5	35		
Cinnamon teal								5	35		
Shoveler						30	25	10	455		
Wood											
Redhead						5	5		70		
Ring-necked						5			35		
Canvasback						15	10	5	210		
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
~~Other~~ Merganser						5	10	10	175		
				75	175	385	200	80	6,405		
Coot:						250	100	30	2,660		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	49	7	
Geese	42	2	
Ducks	6,405	388	
Coots	2,660	250	

SUMMARY

Principal feeding areas Agricultural lands northwest of reservoir.

Principal nesting areas

Reported by Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo MONTHS OF May TO August, 19 69

(1) Species	(2) Weeks of reporting period									
	5/4 - 10 (1)	5/11 - 17 (2)	5/18-24 (3)	5/25 - 31 (4)	6/1 - 7 (5)	6/8 - 14 (6)	6/15 - 21 (7)	6/22 - 28 (8)	6/29 - 7/5 (9)	7/6 - 12 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada							80	80	80	80
Cackling										
Brant										
White-fronted										
Snow										
Blue										
~~XXXXX~~ Total Geese							80	80	80	80
Ducks:										
Mallard	30	30	60	60	60	60	60	60	60	60
Black										
Gadwall	5	5	5	5	5	5	5	5	5	5
Baldpate	5	5	5	5	5	5	5	5	5	5
Pintail	5	5	10	10	10	10	10	10	10	10
Green-winged teal			5	5	5	5	5	5	5	5
Blue-winged teal	5	5	15	15	15	15	15	15	15	15
Cinnamon teal	5	5	10	10	10	10	10	10	10	10
Shoveler	10	10	15	15	15	15	15	15	15	15
Wood										
Redhead			10	10	10	10	10	10	10	10
Ring-necked			10	10	10	10	10	10	10	10
Canvasback	5	5								
Scaup			15	15	15	15	15	15	15	15
Goldeneye										
Bufflehead			10	10	10	10	10	10	10	10
Ruddy			5	5	5	5	5	5	5	5
Other Red-breasted Merg.	10	10	10	10	10	10	10	10	10	10
Total Ducks	80	80	185	185	185	185	185	185	185	185
Coot:	30	30	20	20	20	20	20	20	20	20

3 -[illegible]0a
Cont. [illegible]R-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF May TO August, 19 69

(1) Species	(2) Weeks of reporting period: 11 (7/13 - 19)	12 (7/20-26)	13 (7/27-8/2)	14 (8/3 - 9)	15 (8/10-16)	16 (8/17-23)	17 (8/24 - 30)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	80	80	145	145	145	145	625		11,795	3	15
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Total Geese	80	80	145	145	145	145	625		11,795	3	15
Ducks:											
Mallard	60	60	220	220	220	220	2,310		26,950	1	90
Black											
Gadwall	5	5							420		6
Baldpate	5	5	30	30	30	30	190		2,590		6
Pintail	10	10	40	40	40	40	2,850		21,840		18
Green-winged teal	5	5							350		6
Blue-winged teal	15	15	30	30	30	30	45		2,275	2	24
Cinnamon teal	10	10							770		18
Shoveler	15	15	5	5	5	5	25		1,505	1	18
Wood											
Redhead	10	10	50	50	50	50	1,530		12,810		12
Ring-necked	10	10					10		770		
Canvasback			5	5	5	5			210		
Scaup	15	15							1,050		24
Goldeneye											
Bufflehead	10	10							700		
Ruddy	5	5	15	15	15	15	5		805		
Other	10	10							840		6
	185	185	395	395	395	395	6,965		73,885		228
Coot:	20	20	50	50	50	50	470		6,510		42

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	0
Geese	11,795	625	15
Ducks	73,885	6,965	228
Coots	6,510	870	42

SUMMARY

Principal feeding areas: Aquatics in reservoirs and surrounding grainfields

Principal nesting areas: South and west shorelines

Reported by: Robert L. Barber

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo MONTHS OF September TO December, 19 9

(1) Species	(2) Weeks of reporting period									
	8/31-9/6 1	9/7-13 2	9/14-20 3	9/21-27 4	9/28-10/4 5	10/5-11 6	10/12-18 7	10/19-25 8	10/26-11/1 9	11/2-8 10
Swans:										
Whistling									Burial	
Trumpeter										
Geese:										
Canada	730	730	730	730	730	730	1,370	1,370	1,370	1,370
Cackling										
Brant										
White-fronted										
Snow										
Blue										
TOTAL GEESE:	730	730	730	730	730	730	1,370	1,370	1,370	1,370
Ducks:										
Mallard	1,200	1,200	1,200	1,200	2,000	2,000	1,400	1,400	1,400	1,400
Black										
Gadwall										
Baldpate	125	125	125	125	125	125	100	100	100	100
Pintail	525	525	525	525	700	700	200	100	100	100
Green-winged teal										
Blue-winged teal	115	115	115	25						
Cinnamon teal										
Shoveler	15	15	15	15	15	15	15	15		
Wood										
Redhead	1,500	1,500	1,500	100	100	100				
Ring-necked										
Canvasback										
Scaup	5	5	5	5						
Goldeneye										
Bufflehead										
Ruddy	10	10	10							
Other Merganser	30	30	30	30	30	30	30	30	30	30
TOTAL DUCKS:	3,625	3,625	3625	2,025	3,000	3,000	1,745	1,645	1,630	1,630
Coot:	550	500	550	500	200	100				

3-[illegible]0a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF September TO December, 19[illegible]

(1) Species	(2) Weeks of reporting period: 11/9-15 (11)	11/16-22 (12)	11/23-29 (13)	11/30-12/ (14)	12/7-13 (15)	12/14-20 (16)	12/21-27 (17)	12/28-1/3 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling		11							77		
Trumpeter											
Geese:											
Canada	1,050	1,050	375	375	50	50			89,250		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
TOTAL GEESE:	1,050	1,050	375	375	50	50			89,250		
Ducks:											
Mallard	250	250	200	200					112,820		
Black											
Gadwall											
Baldpate	15	15							2,250		
Pintail									28,700		
Green-winged teal											
Blue-winged teal									2,590		
Cinnamon teal											
Shoveler									880		
Wood											
Redhead									39,900		
Ring-necked											
Canvasback											
Scaup									180		
Goldeneye											
Bufflehead									220		
Ruddy											
Other Merganser	75	75							2,250		
TOTAL DUCKS:	340	340	200	200					198,030		
Coot:									17,500		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	77	11	
Geese	29,390	1,370	
Ducks	198,690	2,825	
Coots	17,500	550	

SUMMARY

Principal feeding areas State and private grain fields surrounding the refuge

Principal nesting areas

Reported by Robert L. Bishop

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo NWR Months of January to April 19 69

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	1	01/11	1	01/11	1	01/26				
II. Shorebirds, Gulls and Terns:										
Killdeer	5	01/11	50	01/26	Still Present					
Common Snipe	1	01/16	10	01/26	"	"				
Greater Yellowlegs	2	01/18	2	01/26	"	"				
California Gull	20	03/28	30	01/26	"	"				
Ring-billed Gull	20	03/28	90	01/26	"	"				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Ferruginous R. L. Hawk	1	04/04	1	04/04	1	04/04		

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR—PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of May to August 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous Period		1	05/05	Still	Present				
Red-necked Grebe	2	05/20	50	07/07	Still	Present			20	
Horned Grebe	1	05/20	1	05/20	Still	05/20				
Eared Grebe	13	05/20	200	07/07	Still	Present				
Western Grebe	2	05/20	50	07/07	Still	Present			20	
Pied-billed Grebe	2	05/20	2	05/20	Still	Present				
Great Blue Heron	2	05/20	30	08/26	Still	Present				
II. Shorebirds, Gulls and Terns:										
Semipalmated Plover	1	08/01	1	08/01	Still	Present				
Killdeer	Previous	Period	100	08/01	Still	Present			30	
Common Snipe	Previous	Period	30	08/01	Still	Present				
Greater Yellowlegs	1	08/01	50	08/29	Still	Present				
Lesser Yellowlegs	4	08/01	30	08/29	Still	Present				
Least Sandpiper	1	08/01	1	08/01	Still	Present				
Dowitcher	6	08/01	6	08/01	Still	Present				
Western Sandpiper	50	08/01	50	08/01	Still	Present				
California Gull	Previous	Period	50	08/29	Still	Present				
Ring-billed Gull	Previous	Period	150	08/29	Still	Present				
Forster's Tern	5	05/20	30	08/01	Still	Present				
Black Tern	1	05/20	10	08/01	Still	Present				

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	1	05/20	20	08/01	Still	Present			
White-winged dove									
IV. Predaceous Birds:									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow									
Marsh Hawk	1	06/10	1	08/29	Still	Present			

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of September to December 1952

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous period		5	9/5	1	10/3				
Red-necked grebe	"	"	20	"	20	9/5				
Eared grebe	"	"	100	"	25	10/3				
Western grebe	"	"	15	"	2	"				
Pied-billed grebe	"	"	5	"	5	9/5				
Great blue heron	"	"	40	"	2	12/5				
II. Shorebirds, Gulls and Terns:										
Semi-palmated plover	Previous period		4	9/5	4	9/5				
Killdeer	"	"	100	"	5	12/5				
Common snipe	"	"	25	"	1	10/18				
Greater yellowlegs	"	"	100	"	100	9/5				
Lesser yellowlegs	"	"	150	"	150	"				
Least sandpiper	"	"	10	"	10	"				
Dowitcher	"	"	50	"	50	"				
Western sandpiper	"	"	10	"	10	"				
California gull	"	"	25	"	5	10/3				
Ring-billed gull	"	"	30	"	5	"				
Forster's tern	"	"	15	"	15	9/5				
Black tern	"	"	10	"	10	"				

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	Previous	period	15	9/5	15	9/5			
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	3	11/17	3	11/17	1	12/5			
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow									
Marsh hawk	Previous	period	3	9/5	1	12/5			

Reported by Robert L. Barber

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pablo For 12-month period ending August 31, 1969

Reported by Robert L. Barber Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	175	Ducks	1,313,585	134	228
	Upland	495	Geese	60,774	6	15
	Marsh	1,292	Swans	182	0	0
	Water	580	Coots	156,765	20	42
	Total	2,542	Total	1,531,306	160	285
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1752
Form -2
(April 1946)

UPLAND GA BIRDS

1613

Refuge Pablo NWR Months of January to April, 19 69

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Cropland 175 A Hayland 15 A Grassland 480 A 670 A								200	Few observations this period

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1)	SPECIES:	Use correct common name.
(2)	DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3)	YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4)	SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5)	REMOVALS:	Indicate total number in each category removed during the report period.
(6)	TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7)	REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form .-2
(April 1946)

UPLAND GA BIRDS

1613

Refuge **Pablo** Months of **May** to **August**, 19 **69**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	**Cropland 175 A Hayland 15 A Grassland 480 A**		**0**	**75**					**275**	**Few observations**

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form 3-2
(April 1946)

UPLAND GA BIRDS

1613

Refuge Pablo Months of September to December, 1969

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	480 a. grassland								200	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-175
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pablo NWR Year ending April 30, 1969

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popula-tion
Meadow Mouse	Grassland, Crop & Hayland 670 A													Moderate
Deer Mouse	"													Moderate
Striped Skunk	"													Moderate
Badger	"													Low
Columbian Ground Squirrel	"													Low
Weasel	"													Moderate
Muskrat	Water & Marsh 1807 A													30
Mink	"													Moderate
Beaver	"													2
Coyote	Grassland, Hay & Crop 670 A													2

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert L. Barber

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Pablo County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
				* All permits are issued and all receipts are received by the Bureau of Indian Affairs, Ronan, Montana					
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	85	340	*	1900
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

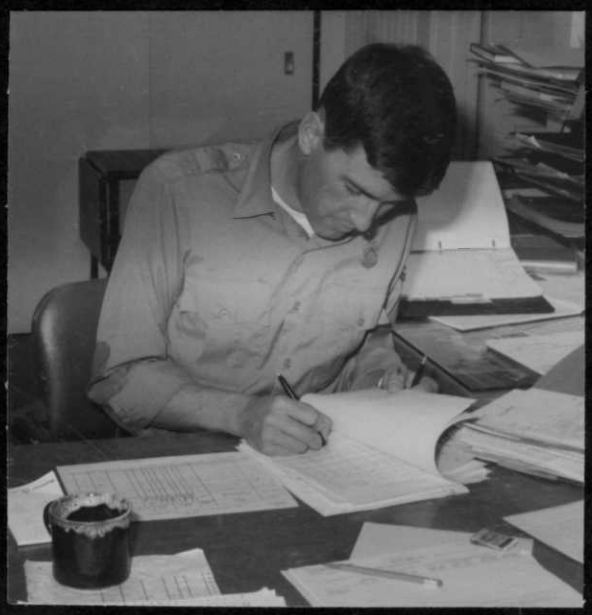
Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.DUP.,D.C.61-88850

Marvin R. Kaschke, Refuge Manager



Robert L. Barber, Asst. Manager

Victor B. May, Foreman II

Grant Hogge, Heavy Duty Mechanic

Ernest W. Kraft, Maintenanceman III

Edward G. Krantz, Maintenanceman I (WAE)

William J. Lampshire,
Maintenanceman I (WAE)

Robert L. Middlemist,
Maintenanceman I (WAE)

This piece of equipment was our most valuable property during the months of January and February. Kaschke

January's record snowfall became a problem when we ran out of places to push it. May

JAN • 70

One of our "white-face" buffalo. Bison do not paw for their food as most other animals do; instead they nose it out with their faces. May

JAN • 70

Snow machines were successfully used to drive buffalo to new pastures in January. Barber

Heavy Duty Mechanic Hogge clips the hair and sprays buffalo calf for ticks. Barber

Engorged ticks on the neck of white-tail deer found during the tick paralysis outbreak in April. Barber

This $4\frac{1}{2}$ year old female Bighorn sheep was over-drugged and sent to Bozeman for autopsy. Results were Malignant Melinoma. Notice the malformation of the jaw. J. Stelfox (top), Kaschke (bottom)

Refuge personnel are frequently required to perform minor veterinary jobs. Foreman May drains an abscess on a yearling buffalo. Barber

Five African students from various universities in the U.S. enjoyed a tour of the Bison Range. Most were Engineering majors and were impressed but scared of the animals. Kaschke

Public use was up 13% to 79,400 individual visits. Some 33,800 people enjoyed the 19 mile self-guiding tour. The Red Sleep Mountain viewpoint is one of the highlights of the tour. Kaschke

Over 200 horses and riders took the annual Saddle Club tour of the Bison Range. Barber

Goatweed spraying is an annual maintenance problem. Unfortunately the beetles did not do the job. The helicopter has proved the most economical method of accomplishing the job in our rough terrain. May

Operation of the Bureau rock crusher, transferred to a site near the Bison Range for J.C.C. training, was inherited by Refuge personnel. The crusher is small but produces approximately 25 cu. yds. of gravel per hour. Kaschke

The office received a new "lid" in April. May

This old surplus wood shed constructed in 1919 was torn down in August of 1969. Barber

Surplus quarters #3 was sold by sealed bid for $154 and moved near Charlo. May

The former clerk residence quarters #2 was sold for $76.00 and moved to Charlo. Kaschke

This water fountain was found efficient and aesthetically acceptable for our picnic area. May

Cattleguards on the tour route were widened to 16' to prevent buffalo from jumping. Kaschke

The annual cooperative State, GMA and Refuge goose banding operation produced 185 geese banded. Kaschke

The Student Trainee had a "run-away" this summer. The vehicle was left in high gear without the hand brake set. It rolled off the road and turned over in a coulee. Kaschke

The annual bison round-up was the subject of numerous newspaper articles. The AP release by Steve Moore (opposite page) was carried from coast to coast. Following is a list of newspapers in which we are aware that the article appeared:

Long Island Press	Long Island, New York
Grit	Williamsport, Pennsylvania
Washington Post	Washington, D.C.
?????	Jonesboro, Tennessee
Stars and Stripes	European Edition
Star Herald	Scottsbluff, Nebraska
Newstime Scholastic Paper	San Francisco, California
Daily Banner	Cambridge, Maryland
Worl Herald	Omaha, Nebraska
News Press	Santa Barbara, California
Los Angeles Times	Los Angeles, California
Hungry Horse News	Columbia Falls, Montana
The Missoulian	Missoula, Montana
Billings Gazette	Billins, Montana
Lewistown Daily News	Lewistown, Montana
The Oregonian	Portland, Oregon
Independent Press Telegram	Long Beach, California
Yakima Herald Republic	Yakima, Washington
Idaho Statesman	Boise, Idaho
Fresno Bee	Fresno, California
Mission Valley News	St. Ignatius, Montana
Great Falls Tribune	Great Falls, Montana
Eugene Register Guard	Eugene, Oregon
Columbus Dispatch	Columbus, Ohio
St. Louis Dispatch	St. Louis, Missouri

NATIVE BREED: A group of bison thunders into an enclosure during the annual roundup at the National Bison Range in Montana. The herd numbers about 400, although when it was established in 1909, the magnificent native animals were almost extinct.

Montana's Big National Bison Range Gives Buffalo Plenty of Room to Roam

They came over the hill from the west, just like in history books—coughing, snorting, and butting, running full bore for a fate unknown.

Their cloven hoofs sounded like a running river. The ground vibrated. The nine riders, silhouetted against the morning sky, pushed them on.

It was roundup time at the National Bison Range at Moiese, an 18,541-acre chunk of Western Montana where every year a page of American history is relived.

Judge Beasts

The "whoa, whoa, juh-hah" cries of the buffalo drivers could be heard long before the first black speck appeared on the range half a mile from the corrals where the shaggy beasts would be judged.

Some would be sold for slaughter, others to build private herds across the nation. The remaining animals would be put back on the range for another year.

There were 150 head in the first bunch pushed into the holding pasture. An equal number thundered over another hill the next day.

Seventy-nine of the animals were sold alive to predetermined sealed bidders for an average price of $368.48.

The national wildlife refuge is nestled in the forested valley of the Flathead River near the middle of the Flathead Indian Reservation. It was established May 23, 1908.

The bison range was created at a time when the herds —once numbering 40,000,000 to 60,000,000 animals—had dropped to an all-time low of 20 known wild buffalo in 1900.

The first buffalo were released on the range in October, 1909, there to roam with their lifelong companions—elks, antelopes, big horn sheep, whitetail and mule deer, golden eagles, and other birds.

Balance Herd

Through natural attrition and sale, the herd is kept at about 325 bulls and cows and roughly 75 calves, officials said. The herd could be much larger, but surplus animals are thinned out to keep a balance with the available food supply.

The work was hard for both men and horses. But riders and others joked and found time for horseplay during the slack periods.

One explained there really is a difference between buffalo and bison.

"Those shaggy beasts out there are buffalo," he said.

"Then what are bison?" was the naive reply.

"That's what an Englishman washes his hands in."

COUNT: During the annual bison roundup in Montana, a metal ear tag and a numbered rump tag are attached to each animal in the herd. This is a federal requirement for interstate transportation of buffalo.